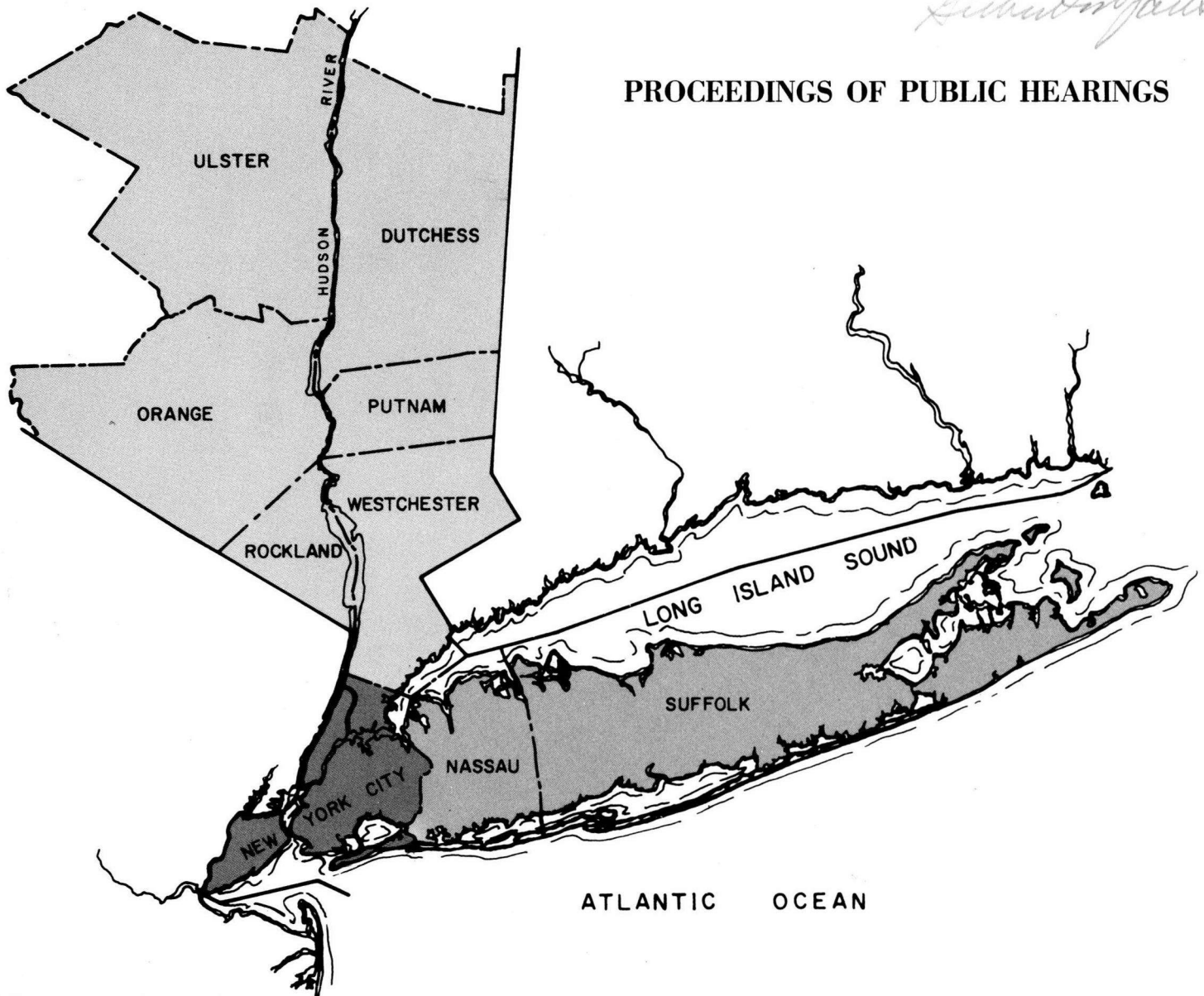


TEMPORARY STATE COMMISSION
ON THE
WATER SUPPLY NEEDS
OF
SOUTHEASTERN NEW YORK

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PROCEEDINGS OF PUBLIC HEARINGS



December 15, 1973

Albany, New York

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WATER SUPPLY NEEDS
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P R O C E E D I N G S O F P U B L I C H E A R I N G S

December 15, 1973

NELSON A. ROCKEFELLER
Governor

WARREN M. ANDERSON
Temporary President of the Senate

PERRY B. DURYEA, JR.
Speaker of the Assembly

December 15, 1973
Albany, New York

SOUTHEAST WATER SUPPLY COMMISSION

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John J. Santucci

William J. Schickler

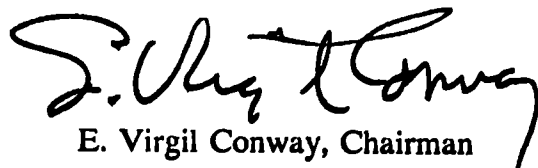
Robert D. Hennigan, Executive Director

FOREWORD

As part of its program, the Southeast Water Supply Commission scheduled a series of public hearings. The hearings were organized so that parties in both existing and potential source areas as well as the Commission service area would be given a chance to speak.

This publication is the record of these hearings and also contains statements that have been submitted to the Commission.

The Commission greatly appreciates the public interest that was displayed at these hearings. These statements will greatly aid the Commission in its work.



E. Virgil Conway, Chairman

COMMISSION STAFF

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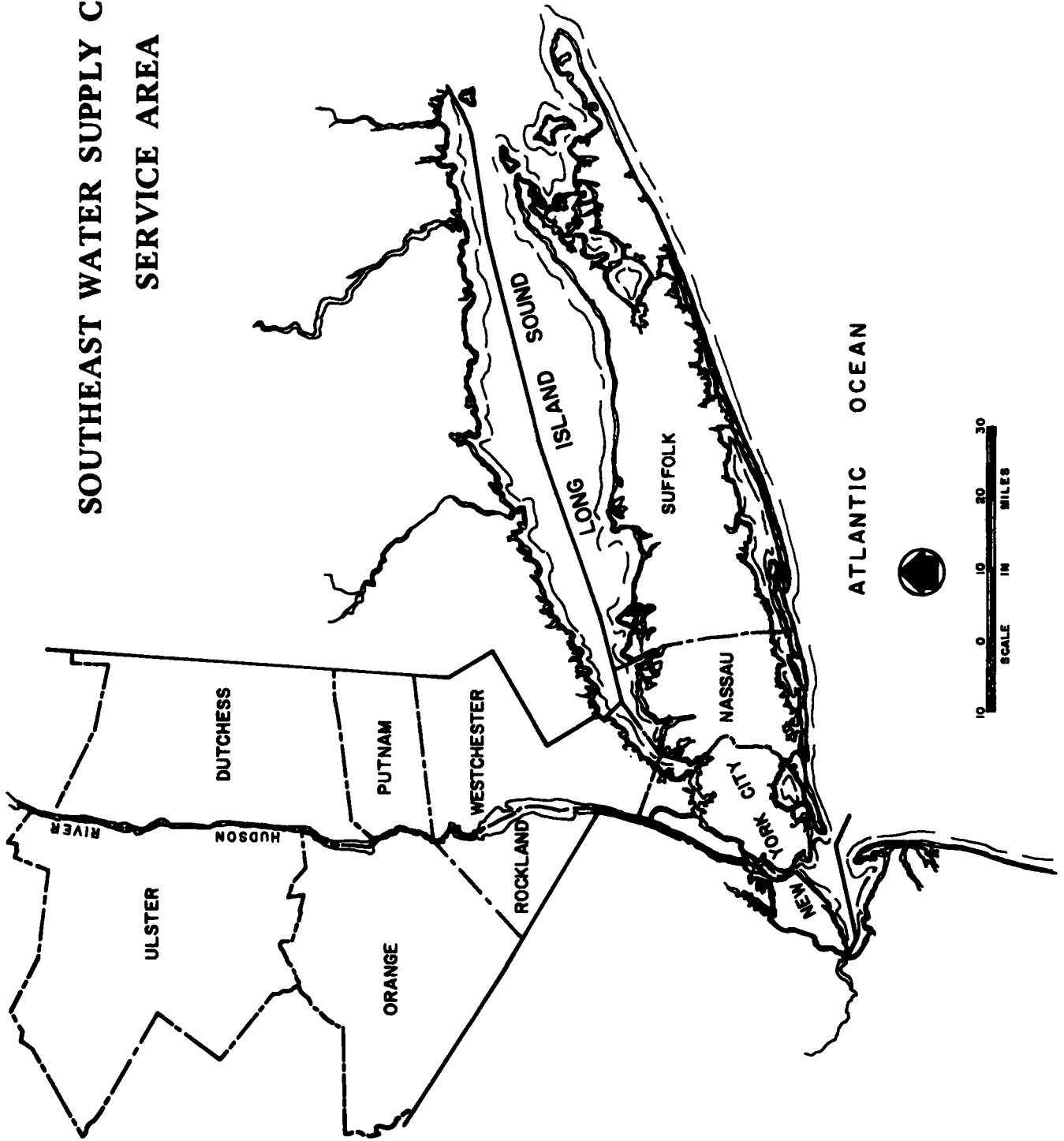
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SCHEDULE OF PUBLIC HEARINGS

<u>Area</u>	<u>Date</u>	<u>Place</u>
Capital District	7/17/73	Albany, New York
Upper Hudson	7/18/73	New Paltz, New York
Lower Hudson	7/18/73	White Plains, New York
New York City	7/19/73	New York, New York
Long Island	7/19/73, 7/20/73	Mineola, New York

**SOUTHEAST WATER SUPPLY COMMISSION
SERVICE AREA**



INTRODUCTION

In order to structure the public hearings the following topics for discussion were distributed to interested groups and included with press releases announcing the dates and places of the hearings.

I. ADDITIONAL WATER

The Commission has determined that additional water in the amounts of 408 to 567 million gallons per day will be needed by the year 2000, and 711 to 996 million gallons per day will be needed by the year 2020 to meet the needs of existing and projected populations in the southeast region.

Suggested possibilities to meet this projected need include a) source development, b) new technology, and c) refined management techniques.

A. Source Development

The Commission is now evaluating the alternatives for ground and surface water development, both local and extra-regional.

Are there any particular elements or information that you would like to bring to the Commission's attention?

B. New Technology

The Commission has determined that the possibilities of weather modification, direct reuse and desalting are limited because of environmental, technical and economic factors and cannot be depended on to meet the projected needs.

Is there anything to be added to this determination?

C. Water Resources Utilization

The Commission is now evaluating actions that offer possibilities to reduce consumption and increase yields.

What is the possibility or desirability of physical and organizational integration to enhance better utilization of existing sources?

What conservation measures should be undertaken, and how shall they be implemented?

II. WATER RESOURCE MANAGEMENT AND REGULATION

There are a number of federal and state programs relative to water supply resource management and regulation in the southeast region.

What is the proper role for the federal, state, interstate and local levels of government in water supply resource management and regulation?

What should be regulated and what agency should do it?

III. URBAN WATER UTILITY ADMINISTRATION AND OPERATION

Urban water utility administration and operation is carried out by some 284 local governments and 602 water systems. The dominant system is the New York City operation. There is no substantial federal or state involvement and no regional organization.

What changes, if any, should be made in the present institutional arrangements?

How can the need for a regional perspective be met?

Water supply, sewage disposal and urban drainage are interdependent, sub-elements of the urban water systems.

What steps can and should be taken to reflect this unity in administration and operation?

Internal management of the water supply utility has a decided impact on the effective use and efficient management of the resource.

*How can increasing water consumption be controlled? By metering?
By other means?*

How should the water supply operation be financed? Should it be self-supporting? Should water system income be used to support other non-water functions? Should water rates be uniform in the southeast region?

PROCEEDINGS OF PUBLIC HEARING HELD AT ALBANY, NEW YORK

OPENING REMARKS

MR. H. CLARK BELL, *Commissioner*: This is a public hearing of the Temporary State Commission on Water Supply Needs of Southeastern New York. The Temporary State Commission on Water Supply Needs for Southeastern New York was created in 1969 and was activated late in 1970.

The Commission was directed to determine the long range water supply needs of the metropolitan area, including New York City and the eight suburban counties of Nassau, Suffolk, Westchester, Putnam, Dutchess, Ulster, Orange and Rockland, to evaluate the available water resources and facilities, to develop specific alternatives, both technical and managerial, to meet needs and make appropriate recommendations on needs, costs, administration, environmental impact.

The Commission has determined that by the year 2000 additional water supply ranging from 408 to 567 million gallons of water a day will have to be added to the existing supply and by the year 2020, the necessary added water supply will range between 711 to 996 million gallons per day.

The Commission has analyzed several possibilities to increase the water supply in this area including new resources, new technology and improved management techniques. The Commission has determined that the possibilities of weather modification, direct reuse, desalinization, are limited because of environmental, technical and economic factors and cannot be depended upon to meet the projected needs. Such techniques should be, however, the subject of intense research in order to overcome present limitations.

During the course of its studies, the Commission has consulted both formally and informally with state agencies, local governments, federal and interstate agencies, other states and public interest groups. Their cooperation has been outstanding and has greatly advanced the work of the Commission.

The Commission has not yet presented recommendations on meeting the water supply needs and will not do so today. The purpose of these hearings is to give all interested public and private agencies, organizations and individuals an opportunity to provide input for Commission consideration.

The announcement of these hearings included some suggested topics and questions in order to give focus to the hearings. They are in no way exclusive or inclusive. Copies of these areas are available at the back of the room.

Now, this is the first of five public hearings being held this week throughout the state. Others will be held in New Paltz, New York, White Plains, New York City and Mineola.

When the Commission makes its final recommendations, further opportunity for public participation will also be afforded. The Commission is here today to listen to all interested parties so that all concerns will be presented to the Commission and will be taken into consideration during its deliberations on recommendations to meet the water supply needs for the Southeast Region of New York State. Your attendance and your participation at these hearings is greatly appreciated.

The first individual who has requested an opportunity to appear before the Commission is Mr. Donald Brightman, Secretary of the Adirondack Hudson River association.

PRESENTATION

MR. DONALD BRIGHTMAN, *Secretary, Adirondack Hudson River Association*: The Adirondack Hudson River Association, as you may know, has been foremost in the battle against various proposals to dam the Hudson River in the Adirondack Mountain region and also various other dam proposals on other rivers in the Adirondacks and other parts of the state.

I would like to make sure that the Commission considers the very basic nature of the world that we are living in, and that our resources, while they are renewable, are not inexhaustible. If we continue to use the concept that we must supply the demands which appear to us in the forms of charts and studies by engineering firms and persons who are commissioned by local communities to supply various commodities,

such as water, in an unending ascending curve; we are talking about something that we cannot fulfill because we are going to be limited by the laws of nature.

For example, in these days when every time we turn around we're reminded that gasoline is in short supply, natural gas is in short supply, heating fuels are in short supply, to talk about increasing the per capita use of fossil fuels as they are presented in this report of the environmental plan for New York State, by a factor of three to one, two and a half to one from 1950 to 1990, I think is bordering on immoral.

I don't want to belabor this but I just simply want to make the point. We do happen to have in New York State a very generous supply of water. According to "The Environmental Plan for New York State" we receive an average of 56,000 gallons of water per citizen per day every year. We have 40 inches of water falling in the form of rain and snow per year, three and a half million acres of lakes and 70,000 miles of rivers and streams. All of this represents an annual supply of 56,000 gallons of water per capita per day. In the most heavily populated areas I think the per capita use is somewhere in the area of 100 to 120 gallons per day. I don't think we're out of water or ways of accumulating water in usable form.

I've heard that some plans that have been considered are on the border of being almost totally rejected. I'd like to talk about one or two of them.

One is the concept of water meters. Mr. Hazen, in a report submitted to this Commission, which was recorded in the Proceedings of Special Conferences of the Temporary State Commission on Water Supply Needs of Southeastern New York dated May 1st, 1973, stated something to the effect that with metering in New York City approximately 20 per cent¹ of the water presumably now wasted would be saved and he sort of disclaimed this as not being practicable.

I would like to say that if you can save 20 per cent of the water that's being wasted, this is a very practical approach. It's 20 per cent of the water that we don't have to supply by damming a stream somewhere. I would like to submit to Mr. Hazen if he happens to be here that if anybody should suggest cutting his salary by 20 per cent, he'd appreciate what a sizeable percentage that is.

I would strongly urge that this concept not be rejected, and that the meter question should be restudied because in the long run we are going to be called upon to husband our resources in such a manner.

Also I understand that recycling of water is sort of being pushed toward the

¹Mr. Hazen stated that a savings of 20 gallons per capita may be possible.

back. This afternoon just before we came over here, I had lunch at the Colonie Diner and I noticed that the water was heavily chlorinated. I asked my companion why this is so since he has an office in this region, and he said that part of this water comes from Stony Creek Reservoir, and part of it comes from the Mohawk River. The Mohawk River as you know, is very heavily polluted both domestically and industrially, so if that's not the reclamation of water, I don't know what is.

The statement is also made in here that there isn't any reused water except in Africa, which I don't believe is true. We're doing it all the time right here in New York State. I've heard statements which lead me to believe that the possibility of using Hudson River water several miles above New York City is being disclaimed as being impracticable because of the advance of salt water. Let me say when you use water in a domestic situation or an industrial situation, you don't really use water, you dirty it up and you put it back into the river. The only difference that would be required if you had a plan which would reclaim that water for use in preventing the encroachment of salt water would be to pump the water back up to close to where you withdrew it. Therefore, you don't have any encroachment of water other than the natural encroachment because of low flow. So if there is any decision being made that this is not practicable because of the water withdrawn, it just doesn't happen that way. If you take it out and put it back in close to where it is withdrawn you haven't disturbed the total flow.

The third thing I'd like to point out is that we must strongly consider, and I know you've done this and really appreciate the fact that all of the people who are on this Commission are studying the problem in detail that the people of New York are very strongly opposed to the building of dams, particularly in the areas that have been reserved for recreational and scenic appreciation of the world.

Let me go back to the battle over Gooley Dam. If you remember a year or two ago, both houses of the Legislature voted unanimously to defeat the proposal to build a dam at Gooley. I strongly believe that this represents the will of the people of this state to prevent the further destruction of the valleys in this state. I strongly urge you to exhaust every other possibility before making a proposal requiring the construction of new dams. I am certain that you conclude that the economics of damming rivers is very shortsighted.

Thank you very much.

MR. BELL: Are there any questions? Thank you very much Mr. Brightman.

At this time, I'd like to read into the record a statement from the Hudson River Conservation Society from its president, A. Scott Warthin, Jr. It is directed to the Executive Director and reads as follows:

PRESENTATION

"On behalf of the Hudson River Conservation Society, I request that you add the following statement to the record of the hearings held by the Commission during the July 17th through 20th period.

"A-1. We remain opposed to any storage reservoir in the Gooley area of the Upper Hudson and feel that any additional Adirondack storage should be made at the Hinckley Reservoir.

"B-1. Obviously, we have near direct water reuse in the Hudson already. We need further research, further public education, to make direct reuse possible.

"2. Management and regulation proposals can never be uniform and equitable in Southeastern New York unless there is some sort of overall authority to unify, control and coordinate our present fragmented and competing systems. A super-agency is indicated.

"3. Water as a commodity is still relatively inexpensive and in an affluent and increasingly complex society we have come to regard it as so cheap that we use it lavishly in increasing amounts. This can be corrected by (a) metering to all users and (b) a substantial rise in price to the consumer. With such a rise in price some processes now regarded as uneconomical--flood skimming, desalinization, direct reuse, etc. will become feasible. Water system income should not be used for non-water functions.

A. Scott Warthin, Jr."

MR. BELL: The next party to testify will be Mr. Edward A. Karath, New York State Department of Environmental Conservation.

PRESENTATION

MR. EDWARD A. KARATH, *Assistant Director of Water Management Planning for the New York State Department of Environmental Conservation*: We have provided department views relating to your mission at a conference on November 30, 1971¹ and have had a relatively close working relationship with you and your staff.

We fully support the results of your studies to date as represented by the

¹Published in Proceedings State Agency Conferences, Temporary State Commission on the Water Supply Needs of Southeastern New York; November 1, 1972

reports which have been produced. The reports on state agency conferences, local government conferences and special conferences, in particular, are excellent for documenting the views of the many local, state, federal and interstate agencies and public interest groups which are concerned with a water supply program for Southeastern New York.

We agree in general with your quantification of water supply needs in the region and particularly endorse the concept of ranges of projections which define the probable limits of future needs. Now, we note that your projections confirm that there will be significant future deficits in public water supplies in the region.

We also concur in the findings in your report on emerging water technology which considers desalting, weather modifications and water reuse and recharge. In particular, the department has participated in two major desalting studies, one of the potential for using saline water in the Hudson River estuary with the electrodialysis process and the other of the potential for dual purpose nuclear power-desalting plants in the New York City metropolitan region. These studies support your findings on desalting.

As the hearing notice indicates you are now coming to grips with the critical problem of how to meet the projected water supply deficits. We will be particularly interested in the results of your studies of alternative water supply projects and of institutional, legal and financial considerations. We would welcome the opportunity to respond to your proposals before you formulate your final recommendations on a specific water supply program for Southeastern New York.

Thank you.

MR. BELL: Thank you Mr. Karath. Are there any questions?

I would now like to turn the meeting over to Mr. Virgil Conway, Chairman of the Commission.

CHAIRMAN CONWAY: I'm sorry that I was detained in another meeting which overlapped with this one. I am delighted you are all here and welcome you.

The next speaker is Dr. Paul Schaefer, Vice-President of the Society for the Protection of the Adirondacks.

PRESENTATION

DR. PAUL SCHAEFER, *Vice President of the Society for the Protection of the Adirondacks*: Mr. Conway and members of the Commission, it's a real pleasure to be here again. I had a similar privilege at Tarrytown back in January, 1972.¹

We regard the entire park, the 6,000,000 acres, an area as large as the State of Massachusetts, as primarily a water resource system of lakes, rivers, streams, mountain slopes and forests. We sincerely believe that the position taken by the founders of the Forest Preserve back in 1894 were sound in their belief that one day the park would serve its greatest purpose by being a source and protector of the water supplies of the State of New York.

The concept has varied somewhat from some original ideas which included many reservoirs. It is now fairly well recognized that forests themselves are reservoirs; that forests help generate clouds that precipitate rain. The other day I heard one of the State University scientists say that important parts of the Sahara Desert used to be well forested with a good rain cycle and once the trees were removed you got zero rainfall and the land totally changed in character. The idea that the only place that you can get water from the Adirondacks is a reservoir is not so at all. We think that the entire park essentially is a reservoir in one sense, and as science digs deeper into causes and effects, I think we think we're going to find that the importance of maintaining the park intact as it is, is going to be far greater than if it is subjected to a lot of reservoirs.

I was very interested in this New York State Environmental Conservation Plan on the environment. The average annual precipitation over the state is 40 inches. This would be the same as if the entire state were covered by an equivalent of 40 inches of water. There are 3,500,000 acres of lakes, 70,000 miles of rivers and streams representing an average annual supply of 5,600 gallons per capita per day. Now, we're using 130 gallons per capita per day and we find that the resource existing today is 5,600 gallons.

Now, we recognize that despite an abundance of water at critical times of the year we can be short in certain places. This is one reason why we have

¹ Proceedings Special Conferences, Temporary State Commission on the Water Supply Needs of Southeastern New York; May 1, 1973.

seriously urged that the Hudson River be given the kind of consideration that would be meaningful in taking its tremendous amount of flood waters six or seven months of the year and using them extensively especially since the Mohawk and the Hudson are becoming so rapidly cleaned up.

The other day I was on the river with sixteen State University scientists. They are now studying the purity of the river and in a couple of weeks we should have a report which I'm sure will be made available to you people. But we were amazed to find the relative clarity of the Mohawk River in the Schenectady area as against what it was even three or four years ago. The river is rapidly being cleaned and, as one of our state department officials said recently in a conversation I had with him, "What are we spending the billions of dollars we are spending in New York State for pollution abatement if we are not dedicating this or these billions of dollars to making a water supply we could use." In summing the whole thing up, we are very rich in water. We believe that the necessity for drowning out the few remaining valleys that we have in the state are unnecessary in most cases. We think that technology and science will catch up with the situation one of these days, especially with the kind of focus that you people are putting on these problems and although you have examined some of them and temporarily at least have set them aside, you nevertheless point out that technology has potentials here that could be important in the future. So again the important thing, is that we certainly all want to see the metropolitan areas of this state have necessary water supplies. This is fundamental. We've always taken the position that only under last--if in the last resort it was found that we had to dam some Adirondack rivers we would be the first ones to say, "Go ahead and do it." We are not convinced that this is imminent. We are more than ever convinced we're going to find answers without doing that. We do feel that the Hinckley Reservoir situation should be exhausted by your board. We are not taking a position at this time for or against it, but we are saying this: That up to the present time this is one of the areas in which we've found very little objection should Hinckley be increased somewhat in size. This is something that we would hope that your Commission will--as a matter of fact, we had hoped by this time to have found a map or a study of the Hinckley Reservoir so that we could have some sort of an opinion as to what it would do.

We know that it will apparently take a constitutional amendment because state land is involved. It happens to be on the far side of the park and I think that

we ought to thoroughly examine the options there as soon as possible and find out what resources might be lost or in what way this might be a sensible thing to do.

Again, the Association to Protect the Adirondacks is very pleased with the kind of input you have given us in your many reports and may I say that none of these reports are lost on the people of New York State. The fact that you have only a handful of people here today in no way indicates the tremendous interest that the people of the state feel about your Commission. We feel that you have kept us informed of your actions. We've had voluminous reports which we've poured over and I think that you're going to find the people of the state really appreciate it. Hundreds of conservationists are not here today not because they are not interested but because they feel that the necessary information is going in an orderly way and at the proper time they will be able to make a determination based on the information that you are giving us and based on information that we will be prepared to react to when your report is out.

Thank you very much.

CHAIRMAN CONWAY: Thank you for a statement that was very responsible and thoughtful.

DISCUSSION

CHAIRMAN CONWAY: *You recognize that if the Hudson River is used as a water source beyond flood skimming that it will be necessary to have an impoundment upstate to supply the necessary water to insure that the salt front doesn't move further up the Hudson than naturally. If that impoundment was Hinckley, how much could Hinckley be enlarged and be reasonable as far as you're concerned?*

MR. SCHAEFER: I think that conservationists have reached a maturity that perhaps they didn't have only a few years ago. You will recall the fact that we now have an Adirondack Park Agency functioning. We have a wilderness system set up. The other day the Commissioner of Environmental Conservation issued an order banning any kind of motor vehicles including planes from some 700 lakes within the wilderness area of the Adirondacks. These are things that a few years ago used to be only dreams but are now facts.

The planning that we all feel necessary with respect to the park, the private land in the park as well as the public lands, is being done. I think that the time has come when conservationists are going to be open-minded to pro-

posals that are beneficial to the people as a whole. Whereas, a few years ago perhaps just on general principles, because there was no overall picture of what was proposed and because some outrageous things were being proposed, that you would have had very, very strong opposition to anything that you proposed in this manner.

I would say now it is not the question of how much forest preserve land might be taken. It depends on where it would be. It would depend on the effects of this reservoir on the park, the wilderness, and on the resource as a whole. I think that I can say the conservationists are now thinking in those terms rather than in a narrow term in which they're unwilling to do anything or give up anything.

CHAIRMAN CONWAY: Do any members of the Commission have further questions? Thank you very much, Mr. Schaefer.

The next speaker will be J. C. Broderon, Clearwater Chapter of Trout Unlimited, Vice-President, from Ballston Spa, New York.

PRESENTATION

MR. J.C. BRODERSON, *Vice President, Clearwater Chapter of Trout Unlimited*: Gentlemen, thank you for the opportunity to address this Commission. We do appreciate the presentation of information to our group and the cooperation shown to this conservation organization.

Trout Unlimited is an international organization dedicated to the preservation and restoration of the cold water (trout) fishery in North America. Trout Unlimited (TU) is composed of local chapters whose members are sensitive to the problems faced by trout and their water resources. As such we wish to respond from this viewpoint to the several areas invited by this commission. Many changes are needed in the thinking of all Americans as we have been accustomed to boundless natural resources, to waste, and unlimited energy at our fingertips. These changes in thinking must occur in the water-use areas too. The first area is that of conservation of water use.

Conservation

This Commission has heard testimony that metering will not improve water conservation. NOT SO. Let's look at Philadelphia where according to the authors of the book The Water Hustlers, consumption was cut by 50 MGD with the installation of complete metering in 1959. This represents well over 25 gal/day in per capita consumption since many residences had metering prior to 1959.

Extra regional water consumers certainly feel that Southeastern consumers should not use appreciably more water than they do.

I. ADDITIONAL WATER

We think the Commission should consider some very recent population trends which have indicated the growth is not as great as was once predicted. For instance although the "Joint Venture Engineers" 1967 report estimated population increase in New York City from 8 million in 1965 to 10.5 million in 2020, the 1970 census showed a much smaller rate of increase in population. This same study also indicated that the projected unmetered water needs of 1975 would be adequate to supply the projected metered needs of 2020. This was using the same over-estimate of population growth.

A. Source Development

We must make optimum use of present regional supplies before going to extra regional sources for additional water. This calls for all possible conservation measures with top priority given to metering.

Having done the right things in the region the selection of extra-regional sources should be aimed at those with minimum aesthetic, recreational and fish habitat values rather than the best natural trout resources.

B. New Technology

We oppose weather modification because of its potential environmental and legal implications. However, it seems that direct reuse and desalting should not be so categorically ruled out. Rather, these alternatives should be approached with a keen eye toward developments that will make them most attractive in the future.

II. WATER RESOURCE MANAGEMENT AND REGULATION

We prefer a basin wide approach to water resources administration with no regard for political boundaries. However, a public water supply is by nature a monopoly and should be treated as are all public utilities and overseen by an agency such as the Public Service Commission.

Recognizing a history of generally favorable treatment of the interests of fishing by the New York City Department of Water Supply, it is with particular interest that we address ourselves to an area where we feel more should be done.

The flow in streams below all existing and future reservoirs should be regulated such that discharge would never fall below certain levels set as minimum

requirements for fish habitat and recreational interests. Each dam should provide cold water discharge and modern management, computer and automation technology should be utilized to minimize fluctuations in downstream discharge and reservoir level over any increment of time. This could result in habitat conditions even more favorable than might naturally exist. This has resulted in a recreational trout fishery in many southern areas where it would have never otherwise existed comparable to some superb streams where springs produce natural uniform flow conditions.

Any new construction or modification of existing facilities should be conducted in such manner as to minimize siltation and other such downstream effects detrimental to fish or fish habitat. This function should be supervised by Conservation officials of the states involved.

III. URBAN UTILITY ADMINISTRATION AND OPERATION

With the advent of metering it will be feasible now to measure usage and charge rates that would encourage thrift.

The financing of water should be paid for by the consumer and it should be self-supporting. Revenues generated should only be used for water related functions including sewage treatment and water quality maintenance and surveillance.

Rates in any area should be based on the cost of total water service in that area.

We believe that administrative boundaries should align with regional basins such as the Lower Hudson River Basin and all water functions including supply, sewage treatment and quality surveillance should be managed by this authority.

CHAIRMAN CONWAY: Thank you very much Mr. Broderon for an excellent statement. Are there any questions?

DISCUSSION

MR. FORSTER: *You say you oppose weather modification because of its proposed environmental and legal implications. Would you develop that very briefly please?*

MR. BRODERSON: Yes, In our discussion of this, we felt that the total amount of area, whether it's the United States, New York State or Ohio, is one and if we find a way to take water out of the atmosphere and deposit it upon the area in question, you must of necessity take it from some other area.

MR. FORSTER: *Excuse me. Forgive the interruption but isn't it a fact that during the mid-sixties drought we had the unique situation of having the water collecting areas suffer from drought while all the surrounding areas had adequate supplies of water. Now, I would suggest that weather modification as developed so brilliantly by Dr. Vincent Schaefer, might be a very effective way of helping the economy in the Catskills in the winter when we face a period of low snowfall.*

MR. BRODERSON: No, I would not object as long as you could be assured that there would be a sufficient extra volume of snowfall, rain or snow in these surrounding areas but I don't believe you can count on that. Again, I'm a trout fisherman, not an engineer, but if you could count on extra regional volume of water to support the area shortages, why, then you may have a better position on that, I think.

MR. BELL: *Excuse me, Mr. Broderon. Is your position predicated upon the assumption that there is only X amount of water that has to fall someplace? If you take it in one place it can't fall in the other?*

MR. BRODERSON: Well, as I said, we perceive that if you take it and put it here, it's going to cause an effect someplace else.

MR. BELL: *If, scientifically, it could be demonstrated to you that with proper weather modification technology proceeding, that you actually will cause more water to fall by more rapid seeding of cloud cover, would that change your position?*

MR. BRODERSON: I think it would.

Gentlemen, I have with me Mr. Tracy Lamenec also of Trout Unlimited and he has a comment.

MR. LAMENEC: The one thing that has come up here and hasn't been discussed with relation to weather modification is that if we adopt weather modification in this area this sets a precedent for people, say, to the west of us where our prevailing weather comes from to do the same. If they have a need for water, say, in Ohio we might end up with a shortage here and no clouds left to seed.

CHAIRMAN CONWAY: An excellent point, Mr. Lamenec, and this is one of the legal problems encountered in using weather modification.

The next speaker is Kermit Cantwell, Councilman, Delaware County Sportsmen's Federation, Hobart, New York.

PRESENTATION

MR. KERMIT CANTWELL, *Councilman, Delaware County Sportmen's Federation:*

There is a situation within the New York City Watershed that we would like to call to your attention.

The particular area we are concerned with is the Cannonsville Reservoir area.

As you are no doubt aware, the Reservoir property can be used only for fishing or ice cutting purposes and all other trespassers are prosecuted.

Hunting is definitely not allowed on Reservoir property, and as a result, the deer that now take refuge on this land are doomed to meet death by starvation the first hard winter we get.

This area is in dire need of a good Game Management Program to prevent this from happening.

The people in the City of New York should make their Legislators aware of this situation and insist that it be corrected immediately. The first hard winter we have will take its toll as the deer herd is now over-abundant.

This area was once the best hunting area in the Western Catskills and should be made available for hunting again.

Any help that you can furnish to correct this situation would be greatly appreciated.

As you probably are aware Cannonsville was built in the early sixties mainly to provide downstream release requirements rather than drinking water for New York City. Of course, by taking the valley you've locked up about 14,000 acres at the dam plus another 40,000 that's behind it that there's no way hunters today can get into today and hunt.

This morning also, I had a letter from Glen Harris, who is the Assembly Whip of the New York State Assembly. He had written to Commissioner Diamond and Herb Doig had answered him and he concurs with my feelings.

I also have talked to John Gould at the Stamford office about the area which falls into their jurisdiction and he says that without party permits in this area, certainly there will be a build-up inasmuch as the rest of Delaware County they feel the deer herd is increasing and they are asking again for the party permit in the area that isn't owned by the City of New York.

We feel that if Delaware County was No. 1 in the buck take, it certainly again will be No. 1 in the deer take once the party permit is opened again in Delaware County.

I appreciate the opportunity to speak to you fellows because I am sure that you will have an impact in the City. We have talked to Commissioner Burns. He knows the impact but so far no action has come of it.

CHAIRMAN CONWAY: Thank you very much, Mr. Cantwell. Any questions?

MR. FORSTER: I have a statement to make, Mr. Chairman. Mr. Cantwell wrote to me with respect to this situation which as a conservationist I consider to be a very serious one. From your office two and a half weeks ago, I called the chief engineer of the Department of Water Supply, Abraham Groopman, and Mr. Groopman told me that hunting was illegal, it was not allowed, and the Board of Water Supply Police were instructed to prosecute. But I joined the Department of Water Supply of the City of New York in 1934 and in 1937 we had deleted from the Conservation Law an act prohibiting all hunting on water supply property. From then on hunting was permitted, not expressly in writing, but nobody was prosecuted for hunting. The watershed inspectors who had the job of patrolling the watersheds did it in a very tactful and intelligent way. If we had gangs of men out chopping trees, why everybody was told to stay the heck out of this given area or we gave our men other work to do during the very brief deer season.

So it is not a question of Law. It isn't illegal except in terms of the present administration's feeling that this kind of recreation has no place on the tens of thousands of acres of watershed land. I have the utmost sympathy for Mr. Cantwell's presentation.

MR. CANTWELL: I feel that we aren't asking for both Cannonsville and Papacton.

MR. BELL: I would also like to add that Mr. Cantwell's position, as far as the Ulster County Federation of Sportsmen, which is the sister county to the Delaware County, is well taken. I know that the Ulster County Federation has for a long time tried to make available or more accessible the Ashokan Reservoir area. This is with respect to not only hunting but also sailboating. The attitude of the administration of the City of New York is no, it's locked up forever and stay out. It's a problem and I think it's a problem that the people in that area are very well aware of; particularly the implications that it has.

CHAIRMAN CONWAY: Thank you Mr. Cantwell. The next person to testify is Mrs. Howard LaRose, Lake George, New York. We've heard from Mrs. LaRose before and thank¹

¹Proceedings Special Conferences; Conservationist Meeting.

you very much for being here again today.

PRESENTATION

MRS. WINIFRED LAROSE, Lake George, New York: Thank you very much, and I don't have a prepared statement. I arrived late and missed most of what was said. I may be repeating what someone else has given as a presentation but I do think that we are trying to clean the Mohawk and the Hudson and that's our source of water supply for New York City.

I would also like to perhaps not shoot or hit under the belt, but I do think that if there's any way that this Commission can keep the Army Corps of Engineers out of the Adirondacks, I think we'd all appreciate that. I think perhaps get them on some other sewage and water disposal things, but it seems that all they know is dams. I think we've fought the Gooley Dam once. We don't want to have to do it again and I think metering is your answer in New York City. I think we have plenty of it going by the door down there and I think if we clean it up, why that's the answer to the water supply.

Thank you very much.

CHAIRMAN CONWAY: Thank you, Mrs. LaRose.

The final speaker, unless someone has failed to pass a card up here is going to be Reynolds Wells, Ballston Lake, New York

PRESENTATION

REYNOLDS WELLS, Ballston Lake, New York: I speak to you today without affiliation. I do have some, but as a person with a Bachelor's and Master's Degree in Engineering and with five years of industrial experience in environmental control I speak more from experience and education.

I think that some of these things need to be put in perspective. I saw a picture in the paper recently of a watershed of some water system, I don't even recall if it was in New York State, but they were using horses on the watershed to draw logs and they had some kind of diapers fastened up to the horses so that their droppings would not constitute a hazard to the water supply. This kind of thinking is absolutely ridiculous particularly when you take into account the fact that we

have such gross examples of pollution all around us.

I want to make a comment about the simplest formula or indicator that has ever been developed and which has done so much and had so much impact on the face of America. That is something known as the cost-benefit ratio with which all people who are involved in not only water supply projects but also various other public works projects are familiar. You simply figure what the cost of this particular way of handling a project is and compare it to the benefits which will result and the project or the way of doing it which has the lowest ratio usually wins.

Now, I'd like to submit that this ratio doesn't work. It's been the pet indicator from the Army Corps of Engineers since the year one and the problem with it is that the numerator in this ratio, namely, the cost, is not adequately determined. All the costs are not in there and the costs which I am referring to, principally is the value of irreplaceable resources.

Now, how do you calculate the cost of the land, let's say the 16,000 acres that you need for the Gooley Dam project? You simply say, well, the private land is going to cost you so much an acre, the public land doesn't cost us anything because we already own it. Therefore, that's the cost of land. I submit that that is absolutely the largest falsehood that anyone ever came up with. As a father and son who has spent weekends in the Hudson, we know what the value of the place is. The Army Corps of Engineers did not recognize this value and I hope that the Commission will not fall into any kind of a heavy weighting of something exactly or something akin to a cost-benefit ratio.

I think what's important is that we spend the money and do the job right; that cost is no object in the State of New York. I think this is perfectly exemplified by the group of buildings in which we're meeting today, the South Mall Project. Cost is no object here. I'm not saying it's right but in terms of water supply and water use, let's do it right whatever the cost.

Thank you.

CHAIRMAN CONWAY: Thank you very much, Mr. Wells.

Would anyone else care to offer any testimony?

DISCUSSION

MR. BRIGHTMAN: *I would like to go back to a comment made just after Mr. Schaefer's presentation which related to the advancement of the salt front in the Hudson*

River. My understanding of your statement is that the front would advance further up the river than normal if water were removed during periods of low flow. Is that the way you intended your statement to be construed?

CHAIRMAN CONWAY: A lot of engineers and other people think that there is that danger. I realize that there is that danger. I realize that there was an advance during the drought to some extent. The amount withdrawn would certainly not be large enough to allow the salt front to an advance up to the intake of the Poughkeepsie water supply or something like that.

MR. BRIGHTMAN: Let me make a statement which may help to clarify this. The removal of water for purposes of water supply to any community from any stream need not necessarily cause an advance of the salt front in tidal stream. This is due to the fact that you can pump the water back to an area close to where it was withdrawn after it has been used and treated. Therefore, the total flow of the river would not be any different had the water not been removed.

CHAIRMAN CONWAY: The problem, of course, with the pumping of the Hudson, is that the water would be dumped in Jamaica Bay and in the ocean. It wouldn't be economically feasible to pump the water back too close to where it was withdrawn.

MR. BRIGHTMAN: Well, it might be if you mentioned all of the costs that Mr. Wells mentioned. For example, the costs associated with building a large dam somewhere and a big viaduct for water.

MR. HENNIGAN: The position of the salt front in the Hudson River is due to a lot of things. We can look at the river almost as a fresh water lake extending from New York harbor to Albany with two large inputs in the upper end of it from the Mohawk and the Upper Hudson. Then the factors that you have to consider in terms of the position of the salt front is the fresh water input which it gets in the Albany area and also as it goes downstream. Also any transfers, that is, water which is removed from the river and is not returned to the river which might be the condition in terms of a major new water supply development. Other important factors involved are the winds and the tides. The extent of the salt front movement up the river must be thought of in terms of the severity of the drought time of year, tides, and winds which tend to push this water up river.

When we had the drought in the mid-sixties, approximately one hundred million gallons of water a day was withdrawn from the river at Chelsea. Now if you use

250 milligrams per liter as your definition of sodium chlorides, then the water was definitely salty since it reached about 1000 milligrams at Chelsea and exceeded the 250 milligrams per liter limit for a short time at Poughkeepsie. This is a long way from being salt water as in sea water. The point here being that the salt front movement is a complex phenomenon but that any future proposed withdrawals would not allow for the movement of the salt front to Poughkeepsie based on the sixties drought experience and the 250 milligrams per liter standard.

MR. BRIGHTMAN: I would simply want to make this very clear, that you need not have the situation where you dump water to have to flush it in Brooklyn or Queens; you can pump it back upstream and reuse it. You don't have to suffer with this.

MR. HENNIGAN: That's a physical possibility.

CHAIRMAN CONWAY: *Yes. Are there any further comments?*

MR. SCHAEFFER: Just one other thought and that is that we have never considered that the Hudson should be -- should have water taken out of it in the middle of a summer or in the middle of a drought because that is a time when the maximum effect of salt water intrusion would occur. We only recommended withdrawals during periods of high flow in the river and I believe the record will show that there are many days when 50 billion gallons of water a day go down and there are some days when you get close to 200 billion gallons of water a day. So the amount of water that's available for six or seven months of the year is fantastic. The only thing that we have considered is that some way could be devised whereby the present system would be maintained for summer use and the Hudson River would be really exploited for winter, fall and spring use.

CONCLUSION

CHAIRMAN CONWAY: Thank you all for coming. We appreciate your interest in the work of the Commission and the very valuable input that we have received this afternoon.

ATTENDANCE

PUBLIC HEARING ALBANY NEW YORK

SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

E. VIRGIL CONWAY, *Chairman*
H. CLARK BELL
HERMAN FORSTER
ROBERT C. WERTZ

STAFF

ROBERT D. HENNIGAN, *Executive Director*
EMANUEL BUND, *Counsel*
DAVID E. BUERLE, *Director of Management Studies and Analysis*
IRENE W. BAKER, *Public Relations*

SPEAKERS

DONALD BRIGHTMAN, *Secretary Adirondack Hudson River Association*
A. SCOTT WARTHIN JR., *President Hudson River Conservation Society*
EDWARD A. KARATH, *Assistant Director of Water Management Planning, Department of Environmental Conservation.*
DR. PAUL SCHAEFER, *Vice President Society for the Protection of the Adirondacks*
J. C. BRODERSON, *Vice President Clearwater Chapter Trout Unlimited*
TRACY LAMENC, *Trout Unlimited*
KERMIT CANTWELL, *Councilman, Delaware County Sportsmens Club*
MRS. HOWARD LA ROSE, *Lake George, New York*
REYNOLD WELLS, *Ballston Lake, New York*

PROCEEDINGS OF PUBLIC HEARING HELD AT NEW PALTZ, NEW YORK

OPENING REMARKS

MR. H. CLARK BELL, *Commissioner*: Good morning, ladies and gentlemen. This is the second day of public hearings of the Temporary State Commission on Water Supply Needs of Southeastern New York. Mr. Bell then introduced members of the Commission and Commission staff and gave a brief outline of the work done. The first speaker will be Mr. Donald P. Wanstall, Chairman of the Environmental and Water Resources Committee of the Orange County Chamber of Commerce.

PRESENTATION

MR. DONALD P. WANSTALL, *Chairman of the Environmental and Water Resources Committee of the Orange County Chamber of Commerce*: Perhaps the single greatest concern occupying the attention of the Orange County Chamber of Commerce is assuring the ability of vital services to keep pace with residential and commercial development in the county. Among these vital services we are most concerned about

future water supply and appreciate the efforts of this Commission to study regional solutions to this important problem.

Because you are well aware of the efforts of Orange County to develop additional reservoirs, I will not review the history of this as yet unsuccessful program, but I will summarize the Chamber's recommendations with regard to the institutional and jurisdictional questions providing water in the future.

In completing its report and recommendations, the Chamber urges that the Commission stress the following: First, with regard to administration of water system development by counties, county governments should create distinct departments or agencies with full responsibility for water resource development and see that these departments are staffed by personnel qualified to direct efforts towards this important goal.

Second, the need for broader county powers to acquire sites for future reservoir and other water system development. This calls for action by the State Legislature or other means which will enable counties to resolve the recurring problem that the immediate need for water is not necessarily in the same political subdivision as the source of water.

Third, carrying this problem one step further, the Commission should stress the need for state or regional bodies with responsibility for developing inter-county solutions where necessary. As an example, one of the most desirable reservoir sites in Orange County can only be developed with the cooperation of neighboring Sullivan County. Because Sullivan County is not yet in need of additional water there is little chance that this resource will be developed under present governmental structures.

While the Commission has stated that the region will require an additional 400* to 600 million gallons of water per day by the year 2000, we must constantly remind the general public, legislators and others, that many areas will face a water crisis long before that. Since regional solutions will require many years of planning and development, we urge the Commission to address itself strongly to providing county governments with the legislative tools to serve local problems as they arise each day between now and the year 2000.

That concludes my prepared statement, and I would like to add a few additional remarks.

In the Water Resources Committee of the Orange County Chamber of Commerce, we have become aware of industry being involved in coming into Orange County because of a lack of water. I am Manager of the Reynolds Metals Can plant in the

Town of Wallkill and I won't refresh your memories on all of our problems and so forth in getting into Orange County. However, water was an issue.

I think that as you increase industrial development as well as residential in this community that this problem cannot wait to the year 2000. Obviously, it is not because you people have done a lot of research and a lot of soul-searching for solutions. In addition, just last Friday, we had a breakfast meeting of the Chamber with a professor from NYU who spoke on various subjects and, one of the subjects discussed was the Hudson River, which he is involved in a study of. His figures, if my memory is correct, is that NYU has spent approximately in this development \$4 million a year in trying to see what potential the Hudson River has for water resources. It was possibly opinion, but quite evident in questions that were asked after this breakfast meeting that really with all the research going on, there has been little fruit from all the monies spent.

Now, I realize that it doesn't take today or tomorrow to solve a problem of this magnitude. However, it would seem that all the research that's going on is being filtered into possibly this Commission and other interested parties, and his statement was that sometimes it takes a year to two years to siphon it out, I guess for the layman like myself to read it. But thereafter it seems to be that no action is taken on all of this research.

I would suggest also that in addition to my statement, that maybe this be explored as a possibility for a conclusion for expediency in solving the water situation. Another example of the immediacy of the water supply problem in Orange County is whether or not the present moratorium on building in Goshen should be extended. So, therefore, what I'm saying is that every community or most communities have this problem or that do have this problem are aware of them and cannot solve them by themselves without the proper legislation.

One of the basic problems is, to more or less repeat, is where our Senators have constituents in counties and towns that do not have the problem and they are reluctant to pass legislation. I would ask you to reconsider and possibly help them to understand that the situation, even though it's not needed now, and even though they're not going to be running in the 1990's maybe that we need solutions started now to expediently solve this problem.

DISCUSSION

MR. BELL: *Thank you Mr. Wanstall. Your statement points out two very im-*

important points. First you dwell around the administration of the problem by counties which appears to be on a county level with county powers and second that quite often the source of water is located in one county, the need is in a second county. What kind of tools are you talking about which a county would need or use or are you seeking in order to implement that type of administration?

MR. WANSTALL: Well, as stated, we think that there needs to be one body to coordinate this activity, possibly a state coordination of these water districts to enhance or to help this situation between counties. In other words, where one county may recognize problems, others do not have the problem and yet the pipelines and so forth run through the county that does not have the problem. They're not getting to the county that does. There has to be some coordination.

MR. BELL: *In other words, you are saying then that the county should be the building block at the lower level and a state coordinating agency should consider what sources are available, where the need is, and make the allocations?*

MR. WANSTALL: Yes, sir.

MR. BELL: *Any questions from members of the Commission or staff? Thank you Mr. Wanstall. The next speaker will be Robert P. Adams of Walden.*

PRESENTATION

MR. ROBERT P. ADAMS: Gentlemen, I appreciate the opportunity to offer a perspective within the framework of the discussion topics and to add from various inputs I've presented at other times.

With respect to additional water needs and more particularly to source development, I'd like to commend the Commission for its conclusion that "additional research is needed both on the technical and economic aspects of ground water recharge of treated waste water effluents before it can be developed as an acceptable means of water supply augmentation".

I would sincerely hope this means a long hard look would be taken at situations like those we see in Orange County where the county has embarked on a reservoir plan that has all the earmarks of presenting serious waste water effluent problems. For instance, the watershed in the county's proposed Wallkill Reservoir

starts in land zoned for high density residential use outside of Middletown, New York, one of the fastest growing areas in the state, passes through lands zoned for manufacturing and industrial use and finally reaches the proposed reservoir site after passing through an additional eight miles of broad, marshy, intermittently flowing streambed which is located in still another area subject to heavy residential development pressures.

The number of different kinds of waste water effluents that this stream will see in the near future would, it is suggested, tax the ability of any technology to clean it up adequately for reliable drinking water use.

The point to be made here is that local communities should not be put in the position of having to point out what appears to be obvious surface water usage limitations after the ball is rolling and land acquisition is started. Rather such considerations should be more carefully reviewed and local perspective considered in the very early planning stages.

With respect to the Water Resource Management and Regulation, it's suggested the largest effective agency capable of listening to and objectively evaluating inputs from all smaller agencies be responsible for long-range water source or resource planning and regulation because of the obviously intertwined relationships which don't seek state and county and town lines.

By way of example, let's look again at the Dwaar Kill situation as a case in point. (Incidentally, this is one of the eight reservoirs Orange County is proposing using similar thinking). No where in the Orange County plan is there consideration for Sullivan County's water needs although 21 square miles of Sullivan County land is looked to as watershed for diversion to the Bloomingburg and Dwaar Kill Sites. Similarly 22 square miles of Ulster County land is viewed as watershed by Orange County with no input from Ulster as to its possible needs. Moreover, the three towns which are supposed to receive the water from Dwaar Kill have consistently expressed no interest in it and are making their own long-range plans according to existing law.

Orange County, on the other hand, has proceeded to take land for reservoir use with no legal basis and no local or regional perspective and for the past four years has attempted to get justifying state legislation without success. This year's bill proposed as Orange County was, according to the terms of a court injunction making application to the Department of Environmental Conservation for approval, is one sentence long and very simple. It was S.5466. "Notwithstanding

the provisions of Article XV of the Environmental Conservation Law or of any other law to the contrary, counties may purchase land for the future development of water resources without the filing of plans with or the seeking of approval of such purchases from the Department of Environmental Conservation or from any other state department or subdivision thereof".

It is suggested that there is no place in long-range water resource planning for this attitude and that management and regulation be simplified by limiting county activities along these lines to an advisory capacity, both to the towns in their planning and the state in its decision-making role. It should be obvious that piecemeal efforts that do not fit a larger plan can defeat the purpose of efforts such as those of the Temporary Commission.

Thank you again for the opportunity to make these observations. This broad overview you're taking is both timely and critically important and I wish you well.

DISCUSSION

MR. BELL: *Thank you Mr. Adams. When you speak of "the largest effective agency with regard to giving the overview of the various subdepartments or subunits of government affected," how do you see that? Do you see that as a statewide agency, as a regional agency, how do you see it being developed?*

MR. ADAMS: Well, it's hard to pin down. I would certainly make it larger than county, state if it's effective, if it can function, if it can get along with other states. This is something that would have to be worked out. But from the experience that we've seen in our area, although there is a definite need for water, there is at the same time a framework for doing it within the legal structure and we've seen all of the rules broken.

MR. BELL: *There has to be a new legal structure.*

MR. ADAMS: Exactly.

MR. BELL: *But exactly how large it would be or what its powers would be is left open.*

MR. ADAMS: Well, the legal structure as it stands now is for the towns to set up water districts. This is perhaps shortsighted but at least it has been in the past some sort of a functional operation. This, I would suggest we not get away from until we have something more workable.

MR. BELL: *One further point. You mentioned land use early in your presentation. Later you used the phrase "such consideration should be more carefully reviewed." I assume you mean the intertwining between land use and reservoir development or water supply development. Would this function also be assigned to that "largest effective agency" capable?*

MR. ADAMS: Well, the needs of the towns and the counties might be presented to the larger agency whether they be land or wells or what-have-you. I suggest that someone remote from the towns and the counties might set together a framework and interact with the towns and the counties to get something that is integrated.

MR. BELL: *Thank you very much, Mr. Adams. The next party would be Mr. C. Loeks from the Mid-Hudson Patterns for Progress.*

PRESENTATION

MR. C. DAVID LOEKS, *Mid-Hudson Patterns for Progress*: Mid-Hudson Patterns for Progress is a regional planning and development organization which has focused on the seven counties of the Mid-Hudson Region. Currently, our agency is undertaking a broader inquiry of environmental issues of the entire Hudson Basin under a grant from the Rockefeller Foundation which significantly extends our scope of concern and interest. I guess there's no real dichotomy in these two roles because I think it's obvious when we think about water, clearly what's good for a piece of the area must be thought of in terms of what's good for the whole. I would like to share a perspective which essentially focuses on what we might call the regional considerations rather than purely local considerations.

I have read your reports and program of work. I've got to say that from the standpoint of its scope and thrust and depth and the process that you're embarking on, I wholly commend and endorse what you're up to. I think the approach is sound. It's needed and I would only encourage you to maintain this very careful, thoughtful research-based course of action. It's commendable in public process. I think that as we look over the array of efforts of this kind, certainly the role of this Commission is going to be one of the bench mark efforts in behalf of the New York State's interest.

I encourage you to proceed with the kind of things you're doing today which is the need for broader public involvement. I've got to say that despite the fact you have an extensive publications program, by and large you are not a household

word by any means. You know this. I don't suppose you've tried to become one, but I think obviously for those of you who are in public life and are aware of the political process, that the resolution of these conflicts is going to have to be based on a broad public understanding. I would hope that the Commission, as it moves toward its last phase will raise its profile and will aggressively, even if in tentative terms, state its conclusions to get these things on the table so that people will have a bone to chew on. Very difficult to react to these highly substantive questions except in the context of a specific course of action that's being considered or even alternative courses of action and, therefore, I think you're going to get a much higher level of public response when you get down to where the rubber meets the road and state what it is that you think might reasonably have to be done.

So, therefore, I would urge an early statement even if it's tentative, on your conclusions concerning the disparities between what you've observed to be the supply and the demand considerations, and the conflicts both intra and interregional, whether indeed there are going to be fundamental conflicts. The public is confused on this. You open up the Environmental Conservation's report and you find the first statement under "Water" is that "our water resources are plentiful," which is true but getting that water to come out of the tap is something else again. If we can start to lay where the conflicts are in more clear terms to the public it would be helpful and the same would be said for the questions which you raised in your invitation for testimony which I will try to address briefly, which are the institutional requirements.

On the question of source development, technology, and resource utilization policies, I'd like to strike a note which I'm sure has been struck before. But it is a perspective that I see very sharply as a regional planner now moving to a larger scale and dealing with other water resource people. The theme is picked up from other directions and that is that to develop our water supplies and to protect their quality and their quantity, clearly the land-water use relationships have to be focused on very hard. Not only to understand the nature of these relationships and their interdependencies but also to understand the institutional requirements that may be raised by virtue of the land-planning constraints that we're going to get into if we want to protect these water supplies.

You know the situation on Long Island; your reports cover it. Certainly the Mid-Hudson is another example where the urbanization processes can have the most significant effect on whether those resources are going to be available to us.

The testimony of the previous speaker illustrates in very concrete terms some of those kind of issues. So the burden of my statement would be that as we think about development of supply sources, that we would keep our sights focused in as broadly as possible as to what that might entail if we want to get very serious about the land planning side. I urge that we do so, that we think about both the land and the water use relationships because they are indeed indivisible. Those of you who have been in the water resource game know that for years that relationship has been understood that it's never really institutionally been acted on. As a matter of fact, as I understand it from my water resource friends, even the question of water supply and water quality isn't fully related to other aspects of water resources. So we need to develop a much more comprehensive attack which the work of this Commission dramatizes the need for.

Moving to Item B, I can only say, and I'm speaking as a layman on this, but I've looked at your findings and I am aware of some of the larger growth dynamics that are operating on the New York metropolitan region. Now, this is really recent and it's only within the last 50 years that we've started to see this kind of development. The classic ways of acquiring, treating, distributing, consuming and disposing of water may not be valid. I would hope very strongly that the note struck in your report would be picked up and we only urge that we continue and indeed escalate research and development on the technology on all points in this process: The supply, the distribution, the consumption and the treatment. As a comprehensive planner I feel that clearly this component is possibly one of the things that hasn't got as much attention and certainly may be a weak link.

My last point has to do with your invitation for comments on consumption, particularly the conservation aspects of it, and again this is not a fresh idea. I guess the only thing fresh is to relate to you that the people in the Mid-Hudson know very well that part of their resources are being wasted by other people in New York by virtue of the fact that they turn fire hydrants on and they don't meter their water. Before this used to be a concern chiefly to New Yorkers and to those who understood the strategic elements. I think the difference today is that the average citizen now understands because of our extended communication and broader public understanding that water resources are indeed something that are shared by everyone. Therefore, it is a concern to this region and I'm sure to Long Island and any other part of New York urban region, that these practices go on. So there's an ethical question. From a purely resource utilization standpoint, it

does appear that the best way to get at the conservation issue is through the pricing mechanism. Let the user pay a reasonable component of the cost of what he's consuming.

On the broader subjects of water resource management and regulation and utility administration and operation, I see the classic dichotomy which is also emphasized in the report of the Wagner Commission, the Temporary Commission on the Powers of Local Government. I happen to have special familiarity with it because our office did provide a consultant relationship to this Commission in the processes of their examination in the Mid-Hudson. But again they strike it and it occurs in your own report, that there is a division of labor between the development of supplies and the bulk transmission on the one hand and the distribution and consumption on the other.

The thought is that obviously the state has a fundamental relationship in that first area and that local entities can handle the distribution and consumption. One of the key points made by Leonard Dworsky, Director of Water Resources at Cornell, who I've consulted with is the emerging role of the state-federal partnership in this area. As I related to you, Mr. Bell, when we were talking yesterday about the National Pure Drinking Water bill has passed the Senate. It gets very specific about the federal interest in establishing health and human welfare-related standards in water quality. It also moves toward what I call the cosmetic aspects of water quality, not the health-related, but its turbidity and visual appearance. It provides major incentives to the state to take the primary role in water quality management, obviously, but it does declare as a matter of interest that the federal government is prepared or should be prepared to step in to fill those areas where, clearly, the public health and safety is not being well-served at the state levels. It also provides for funding of research and development projects in this area. This is showing a national interest. If that is passed by the Congress, if it's sustained in the courts, it may be another move toward this broader stake-out of the federal and national interest in this question.

But the point I'm getting at is that the state and the federal government should jointly look at this question of supply development. This implies to me that the state is going to probably have to consider what New Jersey has done. As you know, they've built a state reservoir. It's possible in a multi-state area such as ours that a federal relationship is involved. In fact, I guess the Tocks Island Project would reflect that kind of a commitment already. I guess

really what I would push is that we ought to break out of the mold of the New York Board of Water Supply rubric which was valid at the time it was originated but has very little relevance to this multi-jurisdictional metropolitan region which has common interests. I would hope that the state would continue to foster and to encourage jurisdictional relationships on water distribution, that are somewhat more coterminous with the logical consumption boundary lines, multi-jurisdictional water agencies, county or multi-community level. One of the key points that we continually encounter at the planning level, is that there are irrationalities in the kind of distribution planning that occur at the urbanizing level. These are due to the fact that the local communities are not funded to handle the capital cost of the oversizing for future growth. If you had to put your finger on one single thing that is perhaps the most obvious thing that we could get our hands on in terms of getting more rational meaning and development of the distribution would be to say, "Look, let's approach this like a land bank. Let's use the state's full faith and credit and their low interest to fund that extra capacity and pick up that difference when the users come on and when you collect the money from them give it back to a single fund of some kind." Not a novel idea clearly. It was thought about but thought about in the water area and very likely in the sewer area it is an interest that should be considered further.

You've asked who should do what. I believe that DEC has the assignment and is geared for it. I don't think they're fully tooled up yet but they're sure trying to handle the question of the actual allocation of the resources. It seems to me that it's logical that we broaden that question, not really allocating the water resources but allocating water resources pursuant to policies concerning land-water use relationships. DEC is also the logical entity to take the responsibility for planning, articulating, and fostering these policies since they are a resource planning organization.

The question of pricing is very tricky. Think about the questions of pricing. For example, should New Yorkers pay the same amount for water as the Mid-Hudson? I don't know, I really don't. Pricing is related to a lot of issues but if you get into those kind of questions, clearly the complexities of pricing, what franchise, what I call franchise area, what tributary area would be handled by the distribution? At what point do you shift these? If you think of the conceptual questions at the system level, you know, who's going to do it; how much is it going to cost, how big is the area; it strikes me that perhaps after the basic

concepts are laid down we might want to start to use this utility review and regulation process to arbitrate those questions pursuant to formal hearings. I don't know whether the Public Service Commission is the logical place but I do know that there is a tradition and an understanding of what's entailed in this in the state government.

Whether or not New York State should adopt a "go it alone" policy in view of the emerging initiative at the federal level and the demonstrated interstate interest, I am not certain. But I hope that this Commission's report would highlight in the public's mind the need to develop an effective dialogue and to be very, very careful with these larger supra state relationships. If you are to avoid the necessity of another commission like you for another 20 years thinking about the same things, I would hope that we could use this as a lever. We could say look, here's a big piece of the New York urban action and we can't solve this problem unless the feds and the other states settle these questions and develop this jointly.

I don't have a strong feeling about the timing of the formation of a multi-purpose agency to foster planning and development. When I look at your reports, DEC's reports, the Wagner Commission's reports, and at the kinds of things that Patterns has been doing in the valley, I wonder whether it isn't time to turn our attention to a Hudson Basin equivalent of the Delaware River Basin Commission or the Susquehanna River Basin Commission. Perhaps a multi-use oriented basin-wide agency that would have a full time assignment to monitor and to foster good use policies in land-water relationships at the Basin level.

I believe the Hudson River Valley Commission emerged as sort of a political compromise because we weren't really willing to face up to the question. I think the Commission did very effective work within its very narrow resources. But the fact that it has gone down the tube is probably an expression of the fact that it was given an assignment that was not consistent or coterminous with the problem. I think the Hudson River Valley Commission was too narrow in that it was focused on the gorge. I would hope that as you come toward your conclusions and you think about their quality implications, that you might give some thought to this larger question of linking water resource management with the other processes of resource development and the urbanization process.

DISCUSSION

MR. BELL: *Thank you Mr. Loeks. With regard to the study, you said that you were doing under the Rockefeller Foundation, does that relate to our study area with regard to water or land use?*

MR. LOEKS: It's a relatively new initiative that is projected to last two years. We have not formally developed our public information piece on this so I'll just relate this to you in a very preliminary way.

The study itself will be focused primarily on the Hudson Basin and the contiguous jurisdictions. In other words, it won't be drawn purely at a watershed level but its concern is primarily to engage the experts in the region in a collaborative examination of the defined environmental issues. This will include water resource management. They will look at the issues and collectively assess the adequacy of our present knowledge base, information for planning purposes, and generate a combined statement as to what kind of continuing process for planning and development might be required. We will have information out by mid-summer of 1974.

Let me just stress this in a sense is not a planning study. It's going to generate new information about the status of our existing information. I think it is going to be unique and useful in this sense because we're putting a lot of time on getting the parties who have individual pieces of the action in a collaborative examination of this. So we're not just going to lock up water resource planners in one room and say, "Tell us about water resources." We're going to ask the best minds of the region to consider these things as related subjects.

MR. BELL: *With reference to the related subjects of the Hudson Basin, are you going to go into Connecticut and New Jersey?*

MR. LOEKS: Yes, as required by the issue involved. There's no sharp line on this thing as you know. You think about energy transmission or energy transfer or second home development, or mass transportation or water planning, obviously it varies and obviously we aren't going to cover every piece of the region with equal detail. We're going to be focusing on specific areas that exemplify the problems and the relationships that might be called for.

MR. BELL: *Will Patterns be the central repository for this and contact to be made in your role or state development?*

MR. LOEKS: Yes, in effect, Patterns has been asked to undertake the project and

we will be managing and developing it. The process will be only a very small component of actual work which will be done in house. The rest will be done through relationships with universities and other institutions, but the central point will be in Poughkeepsie.

MR. BELL: *Thank you very much. At this time I'll call Mrs. W. Fleisher of the West Branch Conservation Association, Secretary.*

PRESENTATION

MRS. WALTER L. FLEISHER, *West Branch Conservation Association, Secretary*: I came from Rockland County and we didn't know whether to attend this or the one this afternoon in White Plains. I will just cover the highlights of the presentation to be given this afternoon.

I think that the land use and population are our big problem. The population projection that we've been working with in our county and that we see you working with, troubles us very much. First of all, we see signs that it won't be as large as it's projected and, of course, it's always nice to plan for too many people and hope you won't have that many. But the way we look at it is that the land use has to come first and the population second and if the population projections of any of the other counties are based on the poor studies from Rockland, then I think we ought to start in a different way. We ought to start by saying must we have this population? How did we arrive at this population, and can we serve this population. I mean that's just very possible that we just cannot serve the number of people.

Now, in Rockland we have a zoning map and really, gentlemen, some of the land that is practically vertical is zoned for apartment buildings. Those zoning maps were made with other things in mind. I don't have to tell you what some of them are. Right now we're trying to buy a park. The federal government will put up some of the money and the county will put up the rest and we're confronted with vertical land zoned for apartment buildings. Well, zoned for apartment buildings is a higher rate than zoned for nothing which is practically what its use should be. So we're up against having the population based on the zoning map which is an improbable population. You couldn't possibly get that population on that land.

Now, if you did use the total population for the zoning map, you couldn't provide the water for it. That is, we feel you couldn't. Our study for Rockland County was made with several recommendations for water sources, most of which are

of the most impractical and impossible things. My husband gave a speech one time and the local paper said that conservationists say water plan is all wet. Well, we only wish it were. We can say it's really all dry.

One of the plans, for instance, was to build a reservoir in the area of the Palisades Interstate Park. The Commission tells us it's illegal and the only way you could put a reservoir in the park would be if you provided some sort of recreational incentive and bathing usually isn't the same one recommended for reservoirs. Anyway we were told that it would require legislation in both New Jersey and New York, before you could plan a reservoir there. That was one of the recommendations.

Another recommendation of the water study was to raise the dam five feet on Lake DeForest and that we were told that would only cost \$50,000. That would mean for the five feet front of the dam. But the purchase of the land was not included and the general price would be more like a million dollars to raise the dam five feet than the \$50,000 that's in the water study.

Another recommendation of the water study was to tap the Ramapo River. Our people went up to Orange County and visited with Mr. Miller and Mr. Garlick and they were told that no one had ever asked them about the uses of the Ramapo River. Three new sewer plants were being planned for the Ramapo River and that, in addition, Sterling Forest didn't have enough water and who was Rockland to take water from Orange.

So I urge you gentlemen not to use as any basis of study the Quirk, Lawler & Matusky studies for Rockland County. We have been battling that study ever since it was made and it was made again on all these bases that are not fact.

DISCUSSION

MR. BELL: *Thank you Mrs. Fleisher. Would you tell me a little bit about the West Branch Conservation Association.*

MRS. FLEISHER: It's a local group of conservationists who live in West Branch of the Hackensack River. I don't know the square mileage of the area but it is not an official governmental organization of any sort. It's a citizens' group and we have accomplished several things. One of which is to have sewer plants removed from our area, not installed, with the idea of keeping open space and keeping the developers away. We're known quite a bit around the state as "those people who don't want sewers," and of course, conservationists are supposed to want sewers

but we don't need sewers. We have two acre zoning, we have many tracts larger than two acres, and we hope to keep the place open and green and we are getting two parks due to our effort, so that perhaps describes us.

The main problem facing this Commission is New York City's waste of water and perhaps we in Rockland are only a drop in the bucket as one of those sayings go, most sayings seem to apply to water. I hope that New York City could be solved first and then perhaps if it's true we could tap the City's supply up here and be relieved because we do not believe in using the Hudson. We do not think that the Hudson should be disturbed and we certainly do not want the Hudson used until the study of Mr. Buckley, from Boyce Thompson Institute, is finished. They're making a big study of the Hudson which they say they won't know anything about for five years to ten years is their date. They have advised us that a drop of water in Albany takes 360 days to get to New York City. The Hudson River, because of the tide back and forth, is not a fast moving river and any pollution, which be again an added problem to the ecology of the Hudson. We urge definitely that that not be considered until more is known about it at least.

Your main problem is to think of how to supply the water, but it can't be done at the cost of some other things. It can't be done on the basis of poor facts and incorrect population projections, populations that the land cannot sustain. I mean you can say we're going to get to be a tremendous urban area. On the other hand, you could also say we cannot get to be a tremendous urban area all the way through Orange. Let us build, let's say, towns out in Pennsylvania somewhere or further away. We in Clarkstown in particular, in Rockland County, have noticed that we're like an island of urban development and around us there isn't that urban development and the reason we know that is so is because of the leniency of our Town Board as far as zoning is concerned. So that here we have poor planning and poor zoning has created a dense area where good planning and good zoning perhaps could have avoided that. So we need that in order to sustain ourselves for everything, air, water, you know, the rest of it.

MR. BELL: *Thank you very much, Mrs. Fleisher. Our next speaker will be Donald A. Walsh, New York State Conference of Mayors.*

PRESENTATION

MR. DONALD A. WALSH: I am sure you are all familiar with the State En-

vironmental Plan. I'm concerned with the relatively light treatment that is given to the seriousness of the water supply situation in the area which this Commission is interested in. It looks as though that committee has taken some of the material that you have prepared factually, and has made some recommendations which are questionable in my mind. If that plan passes or is adopted in the form that it is, then I question why we're doing the great technical studies that you have undertaken. It seems to me that you are doing a masterful job in determining what the problem is and offering some alternative solutions, but the thing that concerns me is when I talk to some of my mayors who are not associated with the City of New York and even some of the cities in Westchester, that they're not aware of the urgency of the problem. They're, just as you said, Mr. Bell, when the tap ceases to deliver the water then the problem becomes serious. But the people that I know, for example, in the City of New York who have the responsibility of providing that water say that they are deeply concerned. They said, "We should have started digging six years ago to meet the anticipated shortage," and you know, even in Albany with the members of the Legislature and particularly those from the City of New York who we would think would be concerned, are not only not aware of the urgency of the problem but are not aware of the problem. Yet people who are putting out the State Environmental Plan, in my opinion, being a representative of cities, are great in bringing to the public attention some miscellaneous information as to the seriousness of the problem. So I commend you highly on the technical work that's being done by this Commission.

I would like to stress more than Mr. Loeks stressed the fact that you've got to do more in the public relations field to make people more aware of the problem. If you don't, then I'm afraid that all of your great technical works will be lost and will not develop the results that we need until we've reached that crisis stage.

You know, something is really wrong in state government when you have a study similar to the Westchester and New York City study, that cost approximately \$400,000 and still have uninformed officials. For example when the bill was in the Legislature to prohibit Gooley, to have one major state official, who was familiar with the plan; and in fact, he was instrumental in bringing it about -- to say, in effect, "Look, I'm aware of the water shortage and I'm aware of the problem of a need. I'm aware of the need for going to the Adirondacks for water supply but to compromise the situation with you, I will recommend to the Governor that I take no position on whether or not there should be any impoundments in the Adirondacks."

"I take no position," instead of saying, "There is a water supply shortage," and at least before we take a definite action to prohibit the use of the area, you at least ought to study the subject. Instead we prohibited and then we study. That's very illogical in my thinking. They are really 50 years ahead of us.

The technological people in that Board of Water Supply are really giants in the field and have to take a responsible position. They are really thinking far ahead of any other state agency, that I've been associated with, for the developing and supplying of water to the people of this state. However, I hear people take shots at New York City stating that we've got to do something with respect to the City of New York in the water usage, particularly about the failure to meter in the City of New York. I'm sure that you've had conversations with people in the City of New York with respect to the metering problem and the leakage problem and the answers I get from them are entirely logical. They say to me that New York City doesn't fail to meter its water. New York City is involved in a very logical plan for providing for the metering of water.

Now, I am advised that all new construction is metered and that they are approaching the problem in a very logical way. This is what I am advised and that eventually the City of New York will be metered. But it will take a long time and it's on a sound fiscal basis.

I've also been advised by people in the State of New York who have made a study during the drought as to whether or not the leakage was a great problem in the City of New York and I have no basis other than to say that I was advised by them that the per capita consumption of water in New York City was not as great as some of the other major cities in this country which were totally metered. The metering issue was blown far out of proportion and the crucial problem was that we ought to go somewhere to get a new source of supply for the City to meet the impending shortage. I think that ought to be the emphasis. I also think that what I'm really concerned about is a State Environmental Plan which is more responsible than that which is advanced under this present preliminary draft in relationship to water supply; and that if this plan is not modified to be more consistent with your studies, then I think that this Commission would suffer a great defeat in attempting to accomplish the objectives that you are ultimately recommending. So I would really hope that you would make an effort to sit down with those people who are responsible for drafting this environmental plan and make sure that that plan is consistent with the facts as your Commission has developed them.

Now, I'd like to also point out that a number of years ago the Conference of Mayors wrote a letter to the Governor stating that what we ought to start trying to isolate those places where we ought to maybe use more water impoundments before they fall prey to development. They would be available at a relatively low cost. We suggested at that time in the legislative program of the funds would be made available to municipalities so they could buy sites for impoundment of water. They could borrow the money at a low rate of interest or maybe a no rate of interest from the state to be paid back at a later date from water users so that the funds could be refurbished with additional monies and that sites could be acquired.

It may well be that as a result of your studies, you may determine that maybe some state agency ought to acquire the sites and that maybe the state should develop itself as a wholesaler of water.

Now, the statement was made before that maybe it ought to be done on a county basis and I question if it should be done on a county basis. Maybe it should be done on a statewide basis with the state the wholesaler of water and local governments, maybe on a county basis or on some other basis, might be able to be the distributor of water.

We find that many upstate cities and villages have a large supply of water, some have surplus water, and yet there's a proliferation of small water districts often surrounding existing sources of supply. The Conference of Mayors suggested for years that no new sources of water supply be developed unless it could be shown that there was not available an existing source of supply, and that the economies of delivering water from the existing source of supply were not as feasible as it would be to develop a new source of supply. During this past session of the Legislature the Governor signed a bill which stated, in effect, that upon the petition for the creation of a new water district you'd have to show that, in addition to the need for water which is the present requirements, that you'd have to show that the source of the water which was to be used by the water district was the most feasible source available. We think that concept ought to be expanded to include extensions of water systems or water supply systems into new areas so that if it's a question of whether or not an existing source is going to be used to go into a new area, which is the most feasible one. I mean there should be some

method of statutory criteria to determine who's going to supply a given area and I think we have to also consider the concept of giving municipalities that presently have sources of water supply sort of a franchise in a given area. A municipality can't really say its going to put in 10-inch lines while only 6-inch lines are presently needed, because of the anticipated growth in an adjacent open area if there's no assurance that that municipal entity will be able to service that area when it is developed. For example, in my own community we have a village water district, and adjacent to it is a great deal of open area that is a rapidly growing area. There are three possible choices as to what entity will service the growing area and because no one knows with certainty who will service the area, no one is making the capital investment in the trunk lines that lead to that general area. So unless you can fix with certainty as to who will supply a given area, the municipality is not being responsible by making capital investments in anticipation of servicing the area.

So I do think that we have to go into one new phase in the concept of local government of setting aside service areas which we never have done before. It's kind of a competition of who gets there first sometimes, and that's a bad approach to the water management problem.

One of the other things that sort of bothers me is that representing local government, we seem to have some seemingly differences of opinion with those persons who indicate that they are representative of environmentalist groups and yet we are all the same kind of people. We have the same desires to promote the best public interest within this state and yet we seem to have a great difference of opinion as to what constitute the proper priorities, what constitutes the proper facts, and what is the proper procedure for resolving an acknowledged problem. Greater effort should be made by those people in state government such as your group, to try to isolate the differences of opinion that we might have so that we can continue to sit down over a prolonged period of time, to resolve what might constitute our differences of opinion.

I read the State Environmental Plan and I get an awareness of the fact that one of the things you never talked about but one of the things you avoid is that terrible, terrible word called a dam. Yet when I grew up, I remember seeing the news release about the fantastic floods that we had throughout the country with a great loss of life and the great inconvenience to people; and the great savior was

a system of dams in watersheds that promoted the best interests of the people in some of the major rivers of this state. Yet nowadays it's an outmoded concept, it's a terrible word, and we forgot all the big things and good things that could come to our society as a result of these horrendous structures.

Just to emphasize a difference of viewpoint, we seem to be spending our time spinning our wheels between those representing local government and those representing the environment. As a result, are we going to accomplish some of our objectives? In last Sunday's Times-Union one of the columnists, who is recognized as a great environmentalist, really attacked the State Power Authority for inundating some farmland in upstate New York. This resulted in giving a great deal of additional power to the New York City people so that they could enjoy their air-conditioners on a hot summer day, while the people in Upstate New York had to suffer the fact that they lost some of the farmland which was inundated by this terrible structure. In either the Monday or Tuesday Wall Street Journal, it was stated that as the result of the additional power that was going to be made available because of that structure, American Aluminum Company in the Massena area was increasing its plant size and this would result in something like 600 new jobs being created for people in the North Country; and that eventually there would be 2,000 more jobs for people in the North Country as a result of that additional electric power. I think that the difference between the two articles in the paper indicate that there's a large information gap here and that people don't have the ability to make a proper judgment when you get two newspaper articles that come out that are as diverse as those two newspaper articles. I would wager that if the people of the state in Upstate New York had the full facts on that situation that they would have supported the erection of that dam and I think that one of the problems is getting the right information to the right people. I think we're talking about the future of our society. I don't think we can give way to the defeatists who say let's stop, let's not recognize the fact that we're going to have population growth. Let's put the people somewhere else. I want the people in New York State. I want the people in New York State to say that we have the ability to rise to meet the challenge, to meet the water supply needs of these people, and I think that by utilizing our resources adequately that we can enhance the life style of everybody in this state. We're not going to enhance our life style by saying 'go somewhere else,' because if we're going to send people somewhere else then industry is going to go somewhere

else to get the labor market; and that approach will certainly develop green areas in this state because there will be no people around in the degree that we need to continue to keep New York State the commercial leader in this country and in the world. I think we have to stop saying that we can't meet the problems of the times. We have to talk negatively with respect to population control, negatively with respect to providing homes for people in New York State, then I say that we in local government have the ability to do it. We can do it, New York City had the ability to meet its own water supply needs, but the State of New York said, no, you can't develop a water supply. At least we're stopping you in the Adirondacks. So now, as representatives of State government, you have the burden and responsibility of coming up with those positive plans to show New York City and the southeastern portion of the State as to how they can positively meet the problem. I know that you will on a technical basis but my real concern is that you have to do a great deal of work in the public relations field.

I always read the "Conservation" magazine. I think that your Commission ought to ask for equal time and ought to set forth the facts in an article to be written by someone on your staff stating what the water supply problem is and how it ought to be met, and what are the possible solutions that should be made to the problem. All I ever hear out of the Department of Environmental Conservation is that if we can just hold off until we achieve the proper technology on desalinization of water, then that's going to be the solution of all our problems. I think someone's going to have to stand up and say, 'Now, wait a minute now, let's be factual.' This report that they put out simplifies the problem.

The thing that concerns me is that this Commission, for whom I have a great deal of respect, in the technical field of know-how are doing a great job but not coming up with the public image to make people aware of the fact of what you are doing within the State Legislature. I hope that after you've finished with these reports, you really do a great public relations job and just don't go out of business. If so all will be lost.

DISCUSSION

MR. BELL: *Thank you, Mr. Walsh. I can appreciate your consideration for public relations. It is a very serious problem. It's amazing, people from New York City who are affected don't even realize what we're trying to do*

for them. When you spoke of the state as a wholesaler and local units of government would be a distributor; how do you think that would go over with the council of mayors representing the smaller upstate units of government?

MR. WALSH: I think that, first, in the event you decided to undertake this task, the first wholesaling projects would be to the major metropolitan areas. You're going to still end up down here in the New York City area. And while there might be several hundred towns in upstate New York, there are going to be relatively few that are going to yell. The rest of them will be relatively unaffected.

MR. BELL: *With regard to metering in New York City, our information thus far was that about 20 percent of the water is metered, that's mostly commercial and industrial, and about 80 percent is unmetered. I think that the people that form the intelligentsia in the water business have advocated that all new construction be metered but they have not been able to get that through the the Common Council of City of New York. Therefore, you have something conceptually which has not been politically reduced to a workaday relationship because of the people that represent the various areas on that city council saying, "What do you mean we have plenty of water? We get it from upstate." So the public relations angle there is very, very heavy.*

With regard to the bonding situation, are you talking about the state being a land-planning operation?

MR. WALSH: Yes

MR. BELL: *Taking the full faith and credit or going to an outside authority with moral obligation for the issuance of bonds?*

MR. WALSH: Well, I don't know. That's a technical problem of financing as to which would bring you the best procedure. I had some thoughts about an authority; that's what I had in mind.

No, one of the difficulties about acquiring sites and talking about New York State wholesaling water, is the question of tax exemption of land. In most municipalities that have a water supply problem there is a density of population and, therefore, they can't acquire a sufficient amount of land within their boundaries for the impoundment. If they go outside of their boundaries, they're going to have to pay taxes on it. They're not going to pay taxes on that land unless they really need it and they're not going to buy a piece of land and set it aside for 20 years

with the thought that they might need it 20 years from now for water supply purposes. So they're just not going to do it. But if the state would do it, it would be tax exempt or the state might consider making payments in lieu of taxes. We did a study along this line relating to the taxability of lands of this type and the National League of Cities advises us that in about the 40-some states in this country, they provide that lands which are owned by municipalities for public purposes outside their boundaries are tax exempt. In New York State, we have another criterion. In New York State we say that all land in the state that's used for public purposes is tax exempt. For example, it doesn't make any difference where a church or hospital is located. It's used for a social or public use. But in New York State we say a sewage treatment plant for a water supply facility is tax exempt provided it's within the bounds of the owning municipality and the result is that you have a double standard. We point out that somehow we have to tackle this problem. The only way we feel that we can do anything about it is maybe to develop a larger area. In other words, if the County of Dutchess has to go outside its boundaries to get water supply, then it's going to have to pay taxes on that land. Our answer is turn it over to the state. Let the state acquire it and the tax exempt problem resolves itself. Let everybody share in the water so that there shouldn't be any argument.

We also did some studies in local government up in the State Board of Equalization and Assessment and found that in a great number of instances the watershed land of some of our cities was being taxed about twice the assessment of other agricultural lands in the area. We were having some success in getting our cities to complain and this situation corrected.

MR. JAY P. ROLISON, *Commissioner*: Under the recent amendment to Section 410 of the Real Property Tax Law, the municipalities in which the facility is located outside its own boundaries do grant tax exempt status. This does enable the two municipalities, hopefully, to sit down and perhaps work out some quid pro quo in which a water or sewerage treatment plant facility, is located. That may be a step towards the direction you're referring to about the assessment for taxes when a treatment plant is located outside the municipal boundaries of its jurisdiction.

When you talk in terms of the location of a plant with the working out of cooperative agreements, there is one example that I am familiar with and would like to remind you of. This was the struggle in the early 1960's for the establishment of a part county water district in the County of Dutchess and the political

fight that ensued with the City of Poughkeepsie where a water plant was located as to sale of the plant and sale of water. Litigation has constantly ensued and is still going on between the City of Poughkeepsie and the County of Dutchess. This raises the very serious question for our consideration of whether or not our local governments can or are willing to cooperate and work together in an area as serious as this. It's not always as easy as it might appear.

MR. WALSH: I realize that. There are a lot of statutory bars to accomplishing some of the objectives and there are some new laws that might be necessary.

Maybe the State of New York should take a greater leadership in saying, 'You're not going to be able to develop that little splinter district' and to encourage the unit of local government to supply on a larger basis. You ought to have some sort of incentive with respect to an aid program. We'll pay a certain percentage of the capital construction cost in the event the water delivery system complies with an area method of supplying water in accordance with a state plan. If we had a state plan for the development of water supply in which some efforts were being made by local government in respect to capital expenditure to comply with the plan, and there was an incentive aid program to accomplish this, we might be able to overcome parochial thinking in some of the areas.

MR. HENNIGAN: Don, you made the point about public relations and letting the people know what we're doing, particularly in the State Legislature. I think everybody on the Commission is very much aware of this.

It won't be too long before some recommendations or courses of action will be made public by the Commission and I'd be interested if you had any specific suggestions on how we can get this message across. We don't have a 50 man public relations staff who can grind out press releases, every minute of the day.

MR. WALSH: I would be delighted to sit down with you and give you some thoughts as to how you might accomplish this. I will make it a point to be in touch with you in September with some people on our staff who are PR people.

MR. BELL: With an offer like that, we're sure to take advantage of it because we think that the staff and the work that they have done is outstanding. Also, this Commission has in depth factual knowledge and now we've got to put it together for public consumption.

The next speaker will be Herbert L. Kartiganer from the Town of New Windsor in Orange County.

PRESENTATION

MR. KARTIGANER, *town of New Windsor, Orange County*: I am here to discuss and actually bring an actual water supply project sequence to the attention of your Commission and indicate some of the frustrations and activities involved in actually executing the project and bringing it into being.

By way of background in early 1960, the County of Orange had realized that there was a necessity for water resource management investigation and some coordination within the county. It, therefore, had executed a water supply study for Orange County which was issued in April, 1967. The study, in turn, indicated several solutions and alternatives for the various municipalities in Orange County pertaining to water supply management, resources, et cetera.

I will address my following statement now to one township, the Town of New Windsor.

In the report of the Town of New Windsor, the solution indicated that by 1991 the county should develop the DwaarKill Reservoir and supply the township with it in addition to other townships and in 1981 the Catskill Aqueduct tap should be made for interim requirements. Based on the receipt of this report the Town of New Windsor knowing its growth pattern, its necessities, its impending failures of the subsurface supply of water, authorized an engineering report for the potable water systems and this report was issued January 15, 1968. In effect we inventoried all the water resources available to the municipality, some outside of the municipality; actually had gone through seismic studies in some areas that showed progress of subsurface supplies and actually drilled test wells in other areas. The solutions of this report, indicated that subsurface supply of water would not be feasible to meet the growing needs of the township. At the time of this report, this had been one of the fastest growing townships in the State of New York.

Based on the January 15 report the engineers were authorized to proceed under a HUD grant with actually a plan of development for a surface supply of water. The surface supply was indicated in the previous report and it was indeed the Drury Lane flood skimming project. Basically, it took a surface source of water on a stream, skimmed it during the high runoff season and impounded this water into a reservoir intended at the Temple Hill area. This called for a coordination of

not only utilization of water supply since it was in a historical area of the township and we coordinated with the historic trust, the New York State Department of Conservation, the Palisades Park Commission, et cetera. This was to be a true conservation recreation historical project in addition to a water supply impoundment.

The municipality had a series of informational hearings with adjoining municipalities. The project did indicate certain allowances to supply other townships and municipalities with excess of water from this flood skimming project. It was also coordinated with an intention to utilize the Catskill Aqueduct as a source for the township as an interim supply while this vast project was being executed. Again a number of skimming projects continued within the impoundment area and it would take quite a while to execute the full project.

The municipality received no adverse comment. In fact, they received a very enthusiastic response from all the agencies that had reviewed this. Some agencies had funded it, the Division of Housing and Urban Development, and in the desire to proceed with the recommendations of the engineer and actually execute the project, the municipality required and made application for the permission from the State Department of Conservation to utilize this source as a water source.

On May 16th, 1972, the Town of New Windsor made application to the Department of Environmental Conservation, the Bureau of Water Resources, for the approval of its acquisition of a source of water and its financial and engineering plans for the construction of the water supply system. On October 5th, 1972, the hearing was held in New Windsor and a decision was made on February 5, 1973, by the Department of Environmental Conservation. I will read two aspects of the decision and, in effect, the decision denied the Town of New Windsor this source of water supply. The township contends and is still at a loss to understand the reasons for the denial. However, I will read both statements involved.

Finding of fact on the decision of February 5, 1973: Both the Town of New Windsor and the City of Newburgh may have future needs of the water that could be diverted from the watershed area of Drury Lane stream. It would be imprudent at this time to allocate the water from this watershed area to meet those requirements of the Town of New Windsor which may or may not materialize 40 years in the future.

Now, If I may editorialize on that particular comment, we believe this is exactly what the municipality was supposed to do, to determine what its available resources were and exploit these resources. Every main document issued by state, county, township, indicates the growth of the township. The plan of discussion was based on our population growth and, therefore, we're at a loss as to the doubt

that "it may or may not materialize in 40 years."

The next statement, and this I believe is significant, states:

"The Town of New Windsor is authorized to acquire not in excess of six million gallons of water per day from New York City Catskill Aqueduct."

This indeed was in their application but it was an interim solution while we were developing our own plan. The decision indicates that we are to use this as our long-range solution and, in effect, although the municipality has the right by law to tap the aqueduct, this does not create another water source at all for us. Eventually, after the year 2020 we would have to, if we do not have another source, utilize the aqueduct as a supplement to our flood skimming project. Therefore, in the decision, the last line reads:

The Department rejects the application, maps and plans of the Town of New Windsor as it relates to the diversion and use of the water supply from Drury Lane stream watershed without prejudice to renewal of the application at some further date if it can be shown that a more immediate need exists.

All the documentation presented, all the testimony presented, indicates that the need exists now, indicates that our schedule for construction has already been compromised and indicates that our need for land acquisition, watershed protection, is now, not 20 years hence when we run out of the six million gallons of water being made available or that can be made available from the City of New York. At that time the municipality will be overrun. We are speaking about a watershed now which is available, which should be protected, and actually the municipality's hands are tied from going any further in this project until we have this source approved and allowed to us by the state.

Now, I think what the township intends to do now and we would hope your Commission would be a party to the hearings as a reinforcement, would be to make application for another hearing and request that the Bureau of Water Resources in its decision be responsive to our application. We have not requested an alternative to our water supply. We have requested approval of this chosen source which, incidentally, is the only source available as we had indicated.

I'm trying to make it brief since I know we have only so much time available and if the Commission cares for the staff to have any further information made available to it to follow up, it's certainly available at the municipal file. I believe this addresses itself to your topics for discussion at this hearing, number one, source and development; number two, new technology.

Incidentally, this particular project has been coordinated extensively with the municipality's activities in waste water control and, in fact, has made provisions to take several primary and secondary treatment facilities on Drury Lane stream off the line and substitute it with both staged large and municipal treatment facilities. They have coordinated this project with other agencies and, in effect, have again received no adverse comments, no adverse decisions until this step, and this step is the most important for the township.

This impoundment area is being encroached upon now by industrial developers and when we speak of delay, we speak of many dollars. As a matter of scope, the project here we are speaking about in 1970 construction costs involved in the range of \$14 million and, therefore, if we are to run an annual attrition of 11 percent or 12 percent a year, the word "delay" is very, very costly. Here is a municipality that has taken the bull by the horns, has done it a decade ago, proceeded with the project that we believe is thought out well, has everyone's approval, helps its neighbors, and is now at a point where I believe it needs some help in proceeding.

MR. BELL: Thank you very much, Mr. Kartiganer for an excellent statement. The next speaker would be Herb Hekler of the County Planning Board.

PRESENTATION

MR. HERB HEKLER, *Ulster County Planning Board*: A belated welcome to Ulster County. Ulster County has been very interested and concerned with the operations at this Commission and commends you for the work that has already been accomplished because we think very, very highly of the reports that have been prepared.

The principal areas of concern which we have are (a) the per capita water limitation particularly regarding the definition of municipality and the effect, of course, of a large regional impacting facility like a state university here in New Paltz or the General Motors Plant in Tarrytown, et cetera, as this had occurred in your hearings down in Westchester County, and we are deeply concerned over this definition.

The second critical area of concern for Ulster County is in the management policies of these facilities. Right now it's unilateral management for New York City's benefit. This is the regional water system which did have reciprocal benefits for New York City's receiving our water while we were also to receive water from the aqueducts, of course, and there are problems that will arise in management. For example, delays in issuance of permits for taps on the reservoirs,

potential problems with shutdowns and the like. We think the management should be for all of the municipalities concerned, not the unilateral position and benefit of New York City.

The third area of concern regards water quality and if alternatives are proposed such as the new aqueduct from West Park to Ireland Corners, we'd be very concerned that this water be treated at the Hudson River site rather than raw water proceeding down to the other aqueducts.

And fourth, and one which I would personally like to stress, is the matter of multiple use, particularly the recreational use of the reservoirs. A source reservoir such as the Ashokan, can be of inestimable value to the economic and recreational use development of Ulster County and in speaking to sanitary engineers and others, the year 1973 is quite different from the year 1905 where we are now chlorinating the water, where there is concern with sedimentation, with the stirring up of the reservoirs which I understand is one of the technical concerns in traditional engineering, they would simply look at the tunnel from Alloben and see the red dirt being poured out from the Schoharie Reservoir, that if you consider this from both the standard of biological contamination from swimming and from the turbidity problem, we definitely feel where there's a will there's a way and that this is something that should be definitely surmounted.

With that, I will conclude and thank you very much for coming here to give us this opportunity.

MR. BELL: Thank you, Mr. Hekler.

The next speaker will be Henry Heissenbuttel, Dutchess County Department of Planning.

PRESENTATION

MR. HENRY HEISSENBUTTEL, *Commissioner of Planning, County of Dutchess*: The Commission has indeed challenged our wits in stating that the purpose of this hearing is to determine "how the water supply needs of southeastern New York can be met in a timely and economical manner that is technically feasible, and is economically, socially, and politically and environmentally acceptable." Spontaneously, my recommendation is that you find a "Christ" to use the miracle of the fishes and bread to solve the water supply problem.

This may sound like a facetious recommendation; yet it is the key to answering the question. Before us in the year 2000 is the prospect of more people than can

be served with water by existing systems; yet, the resources are available to meet the needs if one can eliminate people-to-people barriers as Christ did in feeding the 5,000.

Accordingly, the need for an institutional and management arrangement which recognizes that all people have the same basic need for water and should have equal access to the resources and should share equitably in its administration, costs and benefits, appears to be most important and significant to the Commission's assignment.

With respect to institutional arrangements, earlier in the Commission's proceedings I offered general views on the role of local, state, region and federal governments in meeting water needs.

Local government's primary role in meeting water supply needs for the next 50 years should be the organization, creation, construction and administration of water distribution systems. County government should assume the major responsibility for this, particularly where a multi-town area is served best by an area-wide system. It should also assume a moral obligation to see that water resources in the community are protected and developed, particularly where these could supplement regional supplies and lessen the demand thereon.

The State's role in meeting water supply needs should be the provision of financing to help local government fulfill the role described above. It should also resume responsibility for organizing and funding a comprehensive water resources planning agency for the Hudson River to study and guide the development of resources throughout the Basin. In addition, it should acquire potential reservoir sites and assume responsibility for design and construction when needed. In other words, the State should broaden its jurisdiction over our natural water resource facilities and see to it that these are developed to provide the maximum allowable yield for water supply purposes.

The region's role should be the creation, construction and administration of treatment plants and transmission systems that are needed to tap water resources developed by the State and transmit supplies to local distribution systems in multi-county areas.

The role of the federal government should be limited to the provision of financial assistance to the localities, the region and the State.

Application of these general views to the Commission's area of concern and present arrangements in the New York Metropolitan area suggests the following. The State of New York should take over the New York City Reservoir and aqueduct

system, assume responsibility for development of necessary additional supplies, and allocate the resources on a fair share basis to counties for distribution to meet consumer needs throughout the region.

Counties should assume responsibility for developing consolidated water distribution systems and transmitting water from state supply facilities or resources to the consumer.

A review board equally representative of all the counties in the Area should be organized to counsel and help the State and Counties fulfill such responsibilities.

Essentially this arrangement separates the supply and distribution functions and assigns these to the responsive units of government representative of the broad interests in each function, i.e., the State and Counties. The regional review board would provide liaison between the two levels of government and assure equitable treatment to all concerned.

In regards to financial arrangements, I feel, water systems should be self-supporting with user charges providing revenues to pay debt service and operating expenses. Tax income should only be used when necessary to finance capital cost associated with initiation of new systems. Income from water systems should not be used to support other non-water functions.

A single uniform rate system for water throughout the entire region would be highly desirable, but difficult to achieve. In any event, the rate for water in any one part of a system should be the same for everyone. For example, the total cost for water to the consumer in New York City could be different from that paid by a consumer in Westchester, but that portion of the total cost that each pays to finance bringing that water down from Ulster County should be the same.

Regarding the unity between systems, unity in administration and operation of water supply, sewerage and drainage systems requires placement of responsibility for each function in the hands of a single governmental jurisdiction which is big enough and small enough to take on the job. Studies in Dutchess and elsewhere indicate county government is the appropriate jurisdiction. Accordingly, counties should be encouraged to take on these responsibilities. A major help would be state adoption of enabling legislation which would allow counties to take on these responsibilities as general functions, without having to go through the complicated procedures of establishing special districts.

To illustrate this, three or four years ago the State Legislature passed a relatively simple bill which defined refuse disposal as a general county function.

That piece of legislation has been extremely helpful in allowing counties to move on and take on responsibility for solid waste management without going to the very complicated procedures of establishing special districts, with referendum and all the rest involved with that. We feel the same should be done in terms of water supply, drainage and sewage.

On the question of conservation and consumption, I feel individual consumption on the part of the consumer cannot and will not be controlled unless the cost of water or a dire emergency motivates individual conservation measures. Metering would create cost consciousness and help reduce consumption, but this would not solve the overall demand problem. Nevertheless, residents of Dutchess hold strong views that any proposal to give New York City more water must include a mandated enforceable program for metering water users and promoting conservation of use.

If any kind of control is going to be placed on consumption it will have to be done in terms of whole municipalities wherein local growth and development is related to the availability of adequate water resources and communities. In other words, if to control consumption we may have to control growth and ask ourselves whether or not the New York Metropolitan Area should continue to grow without regard to the need for water resources? Or, should there be a limit placed on the amount of water developed for the region which placed a limit on urbanization and consumption?

In summary, it is suggested that the answer to the question posed for the hearing might be found in an overall program that: (1) assigned responsibility for meeting water needs along functional lines; (2) involved representatives of the region's major units of governments in its administration; (3) allocated resources on a fair share basis with equitable cost-benefit financing; and (4) questioned the region's ability to grow and develop without accounting the impact on water resources.

Thank you very much for this opportunity.

MR. BELL: Thank you, Mr. Heissenbuttel.

The next speaker will be LeRoy Fein.

PRESENTATION

MR. LEROY FEIN, *Mid-Hudson Area Flood Group*: The Mid-Hudson Area Flood Group is a group that has gotten quite involved in flood control as well as flood forecasting, and we can remember a couple weeks ago we did have some local flooding around here, Ulster and Dutchess and other counties, from a storm that wasn't even named.

I'd like to mention that there are several dams in the Dutchess County area that are in need of repair and I believe that the state should become involved in the repair to these dams because some of them supply electric power. We're talking about energy and energy crises, and I think that there should be some effort on the part of the state to get or to have the dam repaired or possibly that there would be some state or federal aid to assist in the repair of these dams.

Now, we recall the drought of the 1960's when the Wallkill River here in Ulster County almost stopped flowing and now we don't have any problem. The water is flowing and everybody seems to be happy. But we have to be careful that once we get into another drought then we'll have more problems and we'll wonder where all the water is. It's too bad that we can't capture a lot of this water and back it up into dams, remembering that dams are timing devices for flooding to hold back flood waters. I go along with what Mr. Heissenbuttel said. We're in need of reservoirs and I'd like to also recall that the Army Corps of Engineers proposed reservoirs in Dutchess County. The first one in 1960's called for the tearing down of some 50 homes, and, of course, the public goes to these hearings and they all say, 'We don't want to lose our homes, get out of town,' so they kick the Army Corps of Engineers out of town and that's where it's left today.

The Army Corps of Engineers came back in 1970-71 with another proposal where even certain agencies could help modify these and the public, remembering what happened in the 1960's they put cotton in their ears and they kicked them out of town again. I was one of the only backers of the Army Corps of Engineers projects provided that they didn't take away homes. I believe that the state should become interested since the Army Corps of Engineers in the case of Dutchess County hesitates before they even go across our bridge.

Also in regards to dams, I've tried for two years in a row to have the Department of Environmental Conservation correct whirlpools in the Fishkill Creek. Now, here is a danger area where somebody particularly a child could go down in his boat and get swallowed into these whirlpools. Here is the case where the whirlpools may drop 10, 15 feet below to the bed of the creek and come out maybe 30 feet downstream below the dam.

My question also is in the operation of the spill where there's huge holes and children are falling down there and being rescued, and I'm fearful for their lives and the lives of fishermen. It's ironical that every year the state lets the trout loose right in this same area and yet nothing is done because they claim it's a

private dam. But my question is there should be a general overall state interest in its streams and rivers.

In regards to the Master Plan, I'm glad that the State Environmental Conservation is getting involved in flood plane zoning. Getting people interested in flood plane zoning so that they won't build where they will be involved in these 5, 10, 30, 70, and 100-year floods.

The State Conservation Department says they have no control on the Central Hudson Dam near New Paltz which is located about 40 or 50 miles north on the Wallkill River. They said they have no trouble. They have no jurisdiction in telling Central Hudson when to release the flashboards when they have heavy rains come in these areas and these farmers go out there every year and plant seed and just about every year the seed gets washed away because the flashboards weren't taken down, or the Army Corps of Engineers didn't dredge, or someone years ago changed the course of that river. Now people tell me because I live in Dutchess County that I should stay out of Ulster County because I shouldn't get involved in a flood control project down there because it doesn't do any harm.

Yet I made those people eat their words this year when the roads were closed there as long as they were because of the flood. One of the reasons is, and I brought this up at the state public hearing last week in Millbrook, and that was the fact that no permit is required by any builder across a flood plain. These very roads block up the flood waters and in the case in New Paltz they block them up all the way into Gardiner.

On the problem of pollution, and being a stream gauge reader for almost 20 years along creeks and streams in the Mid-Hudson Valley in cooperation with the Geological Survey, and as an observer for the National Weather Service, I have seen the creeks and rivers in the Mid-Hudson area grow dark because of pollution. I have seen people throw everything from oil to trees into the water when the high water comes and if a tree is knocked down, they shove it right off their property and into the water. So let some other guy take care of it or let it pile up on some dam. I think this is very, very important.

I don't have an answer for it, but there's a lot of junk in the streams, creeks, and rivers and I think that something should be done.

MR. BELL: Thank you very much, Mr. Fein.

The final speaker will be the Honorable Louis Heimbach, the Supervisor of the Town of Wallkill.

PRESENTATION

HONORABLE LOUIS HEIMBACH, *Supervisor, Town of Wallkill*: I've listened with interest at what was said and I've also reviewed with interest the printed material that's been flowing across my desk for the past several years and as a representative of local government, I'm very deeply concerned with water supply, particularly in a fast growing community such as the Town of Wallkill in Orange County. It wasn't but a few years ago that each community had the authority and legal power to solve its own problems including those of water supply. More recently, the state has looked at this in the way that no municipality can solve its own problems any more, either by decree or because the problems are too large and the counties have been asked to step in. Even as you gentlemen are sitting on the Commission now to look at this from a regional standpoint.

The problem still exists and I look at the volumes of studies which have certainly defined the problem that we do need more water and we're looking at some sources of how to get it. But I'm hopeful that out of all this will come a streamlining of a method to get it. I think right now one of the problems is there are too many layers of government that are involved. I don't just speak about water districts on a local level, I'm talking about the whole system. The number of people that we have to go through, for instance to drill a new well, to see in order to get it done and these are some of the things that I think you have to cut through. Hopefully, we can or I think we can do a lot more for ourselves than you give us credit for. Granted that some of these problems are beyond our means. We have a situation locally where Orange and Sullivan Counties should be getting together on a reservoir on the Shawangunk Creek. You outlined these problems in one of your studies and this is fine. But when a water district is formed, we have to go to the Comptroller, the Attorney General, the Department of Environmental Conservation, and the Board of Health. We're not talking about months, we're talking about years in terms of getting something done and if we gentlemen represent the government, we ought to be able to refine this. I think we ought to give people more credit and have less looking over one's shoulder to see that we're doing the right thing. We're told how many gallons we can take per day from a certain source and the quality of the water. All these things are fine, but I think that we can centralize some of this control in fewer places, so that less people have to review some of our work and place a greater trust and confidence in various levels of government, particularly the local level, where the problem exists and where the

solutions can best be made.

Thank you.

MR. BELL: Thank you very much, Supervisor Heimbach.

That will conclude todays hearing in New Paltz. This afternoon we will have another public hearing in White Plains.

ATTENDANCE

PUBLIC HEARING NEW PALTZ NEW YORK

SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

H. CLARK BELL, *Vice Chairman*
HERMAN FORSTER
LOUIS INGRASSIA
ANTHONY M. QUARTARARO
JAY P. ROLISON

STAFF

ROBERT D. HENNIGAN, *Executive Director*
EMANUEL BUDN, *Counsel*
DAVID E. BUERLE, *Director Management Studies and Analysis*
IRENE W. BAKER, *Public Relations*

SPEAKERS

D. P. WANSTALL, *Orange County Chamber of Commerce*
ROBERT P. ADAMS, *Walden, New York*
C. DAVID LOEKS, *President, Mid-Hudson Patterns for Progress*
MRS. W. FLEISHER, *Secretary, West Branch Conservation Association*
DONALD A. WALSH, *New York State Conference of Mayors*
HERBERT L. KARTIGANER, *Town of New Windsor*
HERBERT HEKLER, *Ulster County Planning Board*
HENRY HEISSEN BUTTEL, *Commissioner of Planning, Dutchess County*
LE ROY FEIN, *Mid-Hudson Area Flood Group*
HON. LOUIS HEIMBACH, *Supervisor, Town of Wallkill*

PROCEEDINGS OF PUBLIC HEARING WHITE PLAINS, NEW YORK

OPENING REMARKS

MR. E. VIRGIL CONWAY, *Chairman, Southeast Water Supply Commission*: I'd like to call to order this public hearing of the Temporary State Commission on the Water Supply Needs of Southeastern New York. This is the third public hearing in the area that's covered by the study of the Temporary Commission on Water Supply Needs. We also held one hearing in Albany since it is the location of many of the private organizations, of the headquarters, that are interested in the work of this Commission. (The Chairman then gave a synopsis of the work of the Commission and introduced members of the Commission and Commission staff in attendance.)

I'd like to now call on Mr. Henry S. Moyer, 723rd International Rotary, Committee Chairman, of Scarsdale, New York

PRESENTATION

MR. HENRY S. MOYER, *Committee Chairman, 723rd International Rotary*: I represent the Rotary Clubs of the 723rd International District which comprises Manhattan, the Bronx and Westchester County. The Rotary district has a committee interested

in the environment and conservation.

Water requirements are inevitably tied to water conservation which is the key to meeting future needs. This timely hearing will hopefully be followed with urgently needed intelligent planning.

Conservation of water requires finding the most productive sources of water. Desalinization of salt water is not at present economical. Most of our rivers and lakes are decaying from suburban pollution. Many are already dead or moribund. The most likely and massive source of water is from sewage. We use from 100 to 200 gallons of water a day per person and discharge about 100 gallons as waste water in the form of sewage. Ninety-nine per cent of sewage is fresh water, run-off from rain, street cleaning, lawn sprinkling and water we wash down our drains. Every day we dump billions of gallons of this fresh but polluted water into our rivers, lakes and oceans as raw sewage or from primary or secondary sewage treatment plants. This is a profligate waste of a precious natural resource.

A couple of years ago Henry L. Diamond, Commissioner for Environmental Conservation of the State of New York, said: "We can no longer look upon air, water and land resources as bottomless garbage cans. We must learn to recover, recycle and reuse our resources". Sewage, accordingly, should be treated to make it suitable for reuse.

In the 1972 report of the Citizens Advisory Committee on Environmental Quality (CACEQ) I quote from Page 44 under the heading Waste Water Treatment Technology:

"The technology for converting sewage effluent to drinking water quality is available. Such technology, however, is seldom used. Designs generally continue to apply to concepts that date back 30 to 40 years, chiefly conventional primary and secondary biological treatment. This is inadequate to deal with modern industrial pollutants and growing municipal urban waste problems and increasingly overtakes fresh water supplies."

Commissioner Diamond, who is now the head of the CACEQ, wrote me referring to the above quotation: "The section on page 44 of the Committee's Report advocating advanced technology was based largely on my experience as Commissioner of the Department of Environmental Conservation which administers the control program in New York State."

Gordon Culp, the engineer and outstanding sewage plant builder, has stated that sewage can be treated to remove domestic and other waste to bring the treated water to a purity in compliance with U.S. Public Health Drinking Water Standards. The technology and engineering know-how for this type of treatment is successfully

in operation in a number of plants and others are in construction at little more cost than secondary treatment. Culp built the great plant at Lake Tahoe and is now building in Fairfax County Virginia, the most modern AWT (Advanced Water Treatment) plant in the world, where they expect to have the sewage water made potable.

The big problem in water conservation is the important matter of storage facilities. That is no more a problem for the reuse of properly treated sewage than any other salvage procedure. It is submitted, therefore, that effort should be directed to use adequately treated sewage as the best conservation source. This will not only save water but eliminate the outrageous pollution of receiving waters from improperly treated sewage.

Thank you.

DISCUSSION

CHAIRMAN CONWAY: *Mr. Moyer, I'd just like to ask you informally, did you have our report on the sewage recycling?*

MR. MOYER: I can't find as much in here. I don't believe I have gotten through it.

CHAIRMAN CONWAY: *That report covers it in detail and we'll see that one is sent to you Mr. Moyer.*

MR. FORSTER: *I'm delighted that Rotary interests itself in environmental conservation matters. I was wholly sold on this at the commencement of the studies carried on by this Commission but I think, and I think our Executive Director can correct me if I'm wrong, that the Public Health people themselves warned about the possibility of viral contamination of the water and stated to us, that further research had to be done in this area before we could accept the doctrine of a reuse of sewage which appealed to very many of us because of the hundreds of millions of gallons slightly contaminated that were used once and wasted.*

MR. MOYER: I happen to also be on a committee for clean water in Palm Beach, Florida, Concerned Citizens for Clean Water. I testified before the Environmental Protection Agency in Palm Beach County on a matter of sewage, treatment of sewage. I listened to microbiologists, epidemiologists, chemists, chemical biologists and other men who were experts in the matter of sewage disposal and also the pollution

of the ocean, because I've been worried about swimming in the ocean now for several years and I don't swim there any more. Every one of these men proved to me that the sewage that's going into the ocean is polluting the ocean, but they also proved to me that advanced water treatment of sewage can eliminate all of the viruses and bacteria that are in the sewage. I don't know where the information comes from, from the Board of Health, which says it's not possible but I saw a picture of the plant at Lake Tahoe where the sewage went in one end and they were drinking the water coming out the other end and I question whether or not you've gotten proper information.

I believe that it's possible. I know that it's possible or Gordon Culp couldn't possibly have made this statement--because his whole career and his whole business is built on being able to make sewage potable, and that's what his testimony is.

CHAIRMAN CONWAY: Mr. Moyer, I would like to point out that the Lake Tahoe plant is not used for drinking water, it is used for irrigation. Now, I think you're right that a lot of sewage might be made potable but until the health department finds this treatment acceptable, this is not a viable alternative. We know that sewage is being reused on Long Island and in many other places.

Our second speaker submitted a statement, Walter L. Fleisher, West Branch Conservation Association, Vice-President from New York City, New York.

PRESENTATION

MR. WALTER L. FLEISHER, *Vice-President, West Branch Conservation Association*: Mr. Conway, gentlemen, ladies and gentlemen: I am a Mechanical Engineer with thirty-five years experience in the construction field; and I have taken part for many years in zoning disputes, environmental issues and other civic activities.

I have read and studied the eight volumes issued by the Commission. I have made a detailed analysis of the Comprehensive Water Supply Study for Rockland County and that for Orange County as well. I have examined the Sewerage Studies for Rockland County and Orange County and innumerable other studies, books and articles.

All of the official studies--and the publications of the Commission are no exception--rely upon an outdated and untenable assumption. That assumption is the population projection based on past growth and an implied "law" that all land--mountainsides and swamps--must be filled up to the zoning capacity and then "rede-

veloped" to an even greater saturation population. Once a population projection has been accepted there is no other course but to provide the services needed with the aid of massive doses of engineering technology.

Instead, we believe the Commission should attempt to prepare a water balance study. Such a study would allocate water to evaporation, transpiration, stream flow and waste dilution. After providing for those needs, only that water which is left could safely be diverted for water supply use.

The Commission should attempt a correlation between its population projections and all the other facilities besides water that would become necessary. It should consider the effect of all these factors--more roads, more power and fuel consumed, more land paved over--on the environment and on the quality of life. As yet there is no environmental assessment of the broader consequences of the projected regional population, in the entirety of the published material. Overall environmental planning is not only my idea. It is propounded by many others, a notable recent example being the "Environmental Plan" put forth by the New York State Department of Environmental conservation, on which hearings were held a week ago.

Is population growth inevitable or can it be controlled? The New York State Court of Appeals has twice upheld the right of municipalities to control population on the basis of available public facilities. Suffolk County is purchasing land to prevent development. New York State law allows gifts or purchases of scenic or open space easements. The Adirondack Park Plan limits growth in six million acres. We also note the plain common sense of the American people has reduced the birth rate to the break-even point, and is still dropping.

There is another vital factor that should have greater consideration. This is the projection of rising per-capita water consumption. Is there a rational basis for the Commission projecting that water consumption will rise to 150 gpcd? No research nor studies are offered to show such a quantity is necessary; only trend lines and present practice. Trend lines are not immutable and increasing consumption is not inevitable. Metering and reversed rate structures to penalize excessive usage is mentioned, but requiring the design of household appliances to economize on water-use is ignored. The range of water-use of clothes washers today is from thirty-five gallons to fifty-five gallons for equal performance; dishwashers, twelve and a half to sixteen and a half gallons; garbage disposals are one hundred per cent wasteful of water. The Commission should consider mandatory pressure reducing valves to limit house pressure. This will reduce the waste

from excessive flow and leaking faucets. Filling a single swimming pool can take thirty-five thousand to forty-five thousand gallons. All of these items and others could be regulated without imposing any hardship.

Assuming 125 gpcd, 16 per cent reduction from present projections and the available supply of 2,000 mgd, a population of sixteen million could be supplied, although I am not recommending that population.

To put the entire population issue in some perspective, the thirteen county area comprises 5,179 square miles, or slightly more than 10 per cent of the area of New York State. Its twelve million people are more than 60 per cent of the State's population. This gives an average present density of 2,300 people per square mile and projects a future density of 3,100 to 3,500 people per square mile. The most densely populated country in the world is The Netherlands. It has a density of about 900 people per square mile. The most populous country in the world is China. It has 200 people per square mile and the average density of the United States is 69 people per square mile.

For these reasons I believe that neither the necessity nor the desirability of a major regional water supply system has been demonstrated.

I will not discuss some of the specific recommendations and conclusions.

It appears that the regional project that will be recommended is the "Hyde Park Plan" to tap the Hudson River. In all of the discussion of this plan quoted in the Commission's publications the only problem mentioned is the salt front. Environmental problems are ignored. It is unthinkable at this time to recommend, or proceed with, a project of this magnitude without a complete environmental assessment by an impartial group, in no way employed in the design or construction of water works facilities. I will leave to others better qualified than I, to examine the environmental consequences. (For instance: Boyce Thompson Institute reprint #2233 which I have previously submitted to the Commission.)

I offer just one horrible example of imprudence with the environment in a water supply scheme, the Aswan High Dam on the Nile River which has wasted the western Mediterranean fisheries, produced epidemic schistosomiasis and is ruining large agricultural areas.

I find the references on waste water recycling contradictory. In one place the Commission states that recycling is not possible and that recycled water is not even acceptable for irrigation. Elsewhere I find the admission that much potable water actually is recycled sewage. Every river that is used for water

supply downstream of any human habitation recycles sewage. Certainly the Hudson River at Hyde Park receives and recycles all the effluent from all the inhabitants of the cities of Troy and Albany, as well as the slop and discharge of all the vessels engaged in Hudson River shipping and pleasure boating.

The purpose of my comments in this letter is to urge you to take a fresh approach to water supply problems by integrating them into the overall environmental scheme. I urge you not to take the easy way out, that of meeting the demands of so-called "inevitable growth." I recognize that the time remaining is short in which to prepare the Commission's final report but hope this will not be used as a reason for taking the path of least resistance.

I would now like to read a reply to Quirk, Lawler and Matusky's letter of January 26, 1973 to the Commission.

Much of the data used by the Commission is derived from Official County Water Studies. Therefore, the accuracy and validity of these studies is important.

In August, 1972, we submitted to the Commission our "Water Resources of Rockland County, An Evaluation of the Official Study." Our evaluation raised questions as to the quality and conclusions of the "Official Study." Our findings were represented to the Rockland County Health Department and a representative of the consulting engineer at a meeting on June 9, 1972. We were promised a prompt reply. To this date we have not had the courtesy of a reply.

The Commission was more fortunate and received a reply dated January 26, 1973. A copy of Quirk, Lawler and Matusky's letter to the Commission filtered down to us in early June, 1973. We would like to comment on Quirk Lawler and Matusky's reply and make our answers part of the official record of the Commission.

1. Adequacy of data:

Weather data. The disclaimer of adequacy was made by Q. L. and M. 20-25 years of records from a single location in the extreme westerly corner of the County is a minimal base for their 50 year projection.

Stream flow data. The supposed supporting information from stream flow records is even skimpier. The data for Cedar Pond Brook, Minisceongo Creek and Pascack Brook covers only two years. The data for the Mahwah River covers eight years; Hackensack River, seven years at West Nyack and 25 years at Rivervale, and the Ramapo River, 49 years.

2. Groundwater yield:

We questioned the extrapolation of yield from the existing 70 square miles of developed well fields to the balance of the Newark group, an additional 30 square miles. We submitted information from Mr. Robert Gerber, Vice-President of the Spring Valley Water Company, indicating only 75 to 80 square miles is suitable for development, that is 5-10 square miles additional, not 30 square miles. This is ignored in the Q. L. and M. reply. The alternate method of estimating yields of the wells cited in Q. L. and M.'s reply is not in the original study. They are merely second-guessing.

3. Ambrey Pond Development:

Still not under construction. Our original doubts remain.

4. Yield Estimate of Lake DeForest:

We consider the omission of the flooding of more than a mile of roads, two bridges and 70-80 acres of land plus a one million dollar cost, as a serious error. It is brushed off in the Q., L. and M. reply.

We admit to our error in the evaporation losses from Lake DeForest. The location of the gauging station downstream of the reservoir does automatically include the evaporation losses in this case. It does not hold for the Ramapo River development and is not answered in the Q., L. and M. letter.

A goodly portion of the Q., L. and M. letter, including 14 pages of Appendix, concerns our objection to the calculations of additional yield from Lake DeForest. We objected that eight years of data, even when mathematically extended, was insufficient to warrant the conclusions. The limitations of "Reconstitution and Extension" are nicely spelled out on pages A-6 and A-7 of the Appendix; that is "...the best estimate...". Quirk Lawler and Matusky are trying to squeeze an additional twelve and one half per cent yield from Lake DeForest with data that probably is only slightly more accurate than that.

5. Ramapo River Development:

Quirk, Lawler and Matusky's answer on the reservoir located in the Palisades Park is not quite the whole story. The Park person contacted had no authority to determine the legality nor grant permission which could only be done by the Park Commission and ultimately the Legislatures of New York and New Jersey. The internal memorandum of the Palisades Park on that meeting indicates that Q., L. and M. were turned down cold on a reservoir proposition as presented; with only slight

encouragement for a combination reservoir-recreational development if a suitable plan were to be presented, which was not and has not been offered.

We noted that Q., L. and M. had neither checked into nor considered the effects of development in Orange County and Sterling Forest; neither as to diversions from the Ramapo River nor as to additional sewage discharge into it. No answer is offered in the reply of January 26, 1973. The exact magnitude of the diversions, whether 10.8 or 13.6 mgd, is not really important, only the order of magnitude is necessary to illustrate the omission. The ten per cent less allowance is not "unaccounted for water", but is seepage and evaporation losses in the reservoir. (Source, Metcalf and Eddy Study for Orange County.) Q., L. and M.'s second-guess cooperative development with Sterling Forest is hardly relevant since it is not included nor explored in the original Study.

6. Hudson River:

We never stated that the water of the Hudson River could not be used as a potable water supply. We did say that it could not be used within the borders of Rockland County; and that the magnitude of the environmental, economic and political problems in developing a regional supply from the Hudson River were such that it was most unlikely that water would be available from a regional system in time to meet Q., L. and M.'s time schedule. They did not reply.

Our program in the first "Evaluation", and in this continuing comment, is to point out the deficiencies in the "Study" and the overly optimistic forecast resulting from these deficiencies.

The problem is that these official studies are perpetuated as the basis for all other planning activities and, if faulty, lead to a whole series of unsound conclusions and plans.

Thank you very much.

DISCUSSION

MR. GIOFFRE: *I think you made the statement that in the course of your discussion that you would recommend that this Commission not take the easy way out. Now, there are two things I'd like to ask you. First of all, what prompts you to make the statement that the Commission is taking the easy way out and if it is doing so what would you recommend in order to eliminate taking the so-called "easy way out"?*

MR. FLEISHER: What I meant by that, was that I think the population projections, and I see them in that final book number eight shows population trends, the recommendation there that the water quantities are to meet that population increase. This is a conservative--or as I say, the method has been used in the past to arrive at it and if you accept that the population must grow then this is the only way. I think that the other approach which I mentioned should be explored and in terms of this plan that the Department of Environmental Conservation has which we recommend. This report says that we have to look at the land in terms of its carrying capacity and use it to the best use of the land not necessarily just people as we can squeeze them in. I was not trying to pre-judge the Commission's actions. I can't. I can only read from what I saw; and most of it, unfortunately, is only a rehash of what all the other people said.

Now, the Commission's own thoughts I really can't read because they're not spelled out to us so I was hoping that they would consider the viewpoint that I have given you as an alternative to what seems to be the conclusions in that last book.

MR. GIOFFRE: *As I recall, you said it was taking the easy way out and I would assume that that statement was not proper.*

MR. FLEISHER: I didn't say it. I said I hope they won't, because of the short time, take the easy way out.

MR. GIOFFRE: *Now, one more question. You also made the statement that insofar as the Hudson River is concerned, and you did not say it would be unusable in other areas except that you would not like to see it used in Rockland County. If Rockland County cannot use it, what makes you think that the other counties are in a position to be able to use it without any danger of its use?*

MR. FLEISHER: No, the reason I said it could not be used in Rockland County is that the salt front comes up above Rockland, goes up to the top of Orange County, so you cannot take water from the Hudson below Hyde Park which was picked I think as a point where the salt concentrations were acceptable for drinking water. That's the reason you can't use it within Rockland County. My objection was that you were now considering taking a very large additional quantity of water out of the Hudson. The Hudson has already been robbed of all the water which goes to New York City which used to go into the Hudson drainage system and at some point you're going

to reach the point where you're going to upset the whole ecological balance of the river and that is what I'm questioning. I say it should not be done until it has been studied and if it can be proved safe environmentally as well as just on the physical availability of the water, then that makes a different question.

I ask for caution and for a study. I don't know whether this study has been made. I've passed on, as I said, the one paper I know of on it. I'm not an expert in that field. I hope that additional work and additional studies will be made before somebody says that we got to take the water from the Hudson River per se without study.

CHAIRMAN CONWAY: *Our Scope of Water Needs, Mr. Fleisher, covered the population. We've been criticized roundly in some areas for estimating such a small population growth. I'm glad you come in here and criticize for estimating too much.*

MR. FLEISHER: I'm talking about redistribution, to the estimate as such.

CHAIRMAN CONWAY: *Yes, I realize that, but it is interesting that we have been criticized in some areas.*

The next speaker will be Mr. Matthew J. Freda, representing the Sullivan County Environmental Council and Sullivan County Neversink-Delaware Study Commission. Mr. Freda, thank you for being with us.

PRESENTATION

MR. MATTHEW J. FREDa, *Sullivan County Environmental Council and Sullivan County Neversink-Delaware Study Commission*: Several volumes of your report have been reviewed, and we feel that it is quite comprehensive. We are concerned, however, that the study has primarily received information from the user counties and the City of New York. The two source counties for the Delaware River System water utilized so heavily by New York City--Sullivan and Delaware--were not included in your formal study report itself for inputs of data and recommendations. We feel that this is a serious oversight. The residents of the Upper Delaware and Neversink Rivers have had to live with the abuses of the river caused by New York City's mismanagement of the river system.

By mismanagement I mean low flows, erratic flows, extreme temperature fluctuations, and the lack of flood control. A striking example of the latter occurred only two weeks ago on June 29th when we experienced one of the most damaging floods within memory in our part of the upper Delaware. Flood damages amounted to over \$4 million in Sullivan County, but these figures do not portray the individual hardship involved. Although the storm that caused the damage was centered well south of the New York City reservoirs on the East and West Branches, the actions by the New York controllers aggravated the situation. The reservoirs at Cannonsville and Downsville were filled at the time, with water spilling over the top. The lower level release valves were open and no water was being diverted to New York City from any of the New York City Reservoirs, including the third one in Neversink.

Let's discuss the general situation, however. New York City uses the three reservoirs for its optimum water supply needs. This means that during an approaching weather system, such as a hurricane, it will not release water prior to its arrival to provide a storage reserve to reduce flows at the time of the storm's arrival on the scene. The result is that if the reservoirs are filled -- as is often the case -- a variance of 21 degrees. A year later, in 1969, this study showed that the average July temperature of the water was 66 degrees with a range of 56 to 83 degrees or a variance of 27 degrees. What I'm getting at now, there is a much greater variance after the dams have been placed as compared to before the dams were constructed.

Now, we recognize that the current situation is possibly beyond the scope and authority of your study. However, there are some inputs to your study that cause us concern. In the study volume published December 1, 1972, and this is essentially CPWS-27 prepared by the Joint Venture Engineers in August of '67, this study provides pertinent facts and observations on the use and misuse of water to New York City. Now, I have to quote from your study somewhat here to build up, to make my point, so a lot of this is directly out of your study. This shows that from 1950 to 1967, consumption rose and fell depending on the availability of water. During wet years consumption was high, whereas in dry years consumption dropped off sharply. For example, consumption in 1961, a wet year, was over 1200 million gallons per day. In 1965, during the sixties, drought consumption was reduced to 1050 million gallons per day by improved leakage control, restrictions on usage, and the voluntary efforts of the citizens.

In making water supply projections to the year 2020, the Joint Venture Engineers compared water consumption in New York City with that of several other cities in the United States. It was found that per capita consumption is comparatively low in New York City, if industrial use is included, but if industrial use is excluded, per capita consumption for residential and commercial use is high in the City.

Now, based on this observation, the Joint Venture Engineers recommend a conservation program of universal metering and leak detection. The recommendation is substantiated by two sets of water need projections. One set assumes the adoption of the conservation program, while the other figures allow for no such program. If the conservation program of universal metering and improved leakage control were adopted, consumption would increase from 1200 million gallons per day in 1975 to 1770 million gallons per day in 2020. If the conservation program is not adopted, consumption is expected to increase from 1350 million gallons per day in 1975 to 1940 million gallons per day in 2020. Accordingly, New York City could be saving 150 million gallons per day by 1975 by adoption of the normal conservation measures of metering and leak detection.

150 million gallons per day is a substantial flow of water if it were available back in the river instead of being wasted by New York City. Let me explain. Over a ten-year period prior to the construction of the dams on the upper reaches of the Delaware, the average water flows at the reservoir sites were as follows in million gallons per day: at Neversink, 165 million gallons a day; East Branch, 474; West Branch, 503; the total, 1142 million gallons a day.

Since the City of New York is authorized to use 800 million gallons a day of the 1142 total available flow that could be used, there remains 342 million gallons a day approximately available for releases at the reservoirs.

Now, I would just like to stop a minute. The previous speaker talked about using excessive amounts of water from the Hudson. But this is approximately one-fourth of the total Delaware river available at reservoir sites now compared to what it was in the 40's or actually this study period, 10-year study period, which ended about 1951 or '52.

Therefore, adoption of the management procedures to save 150 million gallons a day would provide an increase of approximately 44 percent more water for release.

In the same volume of your study previously referenced, Mr. V. C. Terenzio, Chief Engineer of the New York City Board of Water Supply, provided you information

on water consumption that is quite different from that of the Joint Venture Engineers. He stated "that New York City compares favorably and, in fact, has a considerably less per capita consumption than other cities used". This is in his comparison. Mr. Terenzio did not qualify his statement as to industrial usage to give the true values. His comments are therefore misleading.

On the matter of metering, Mr. Terenzio made several comments. He indicated the estimated cost of installing meters in the city would run to \$100 million. He said further that most of the water saved would be released as excess water down the river. Finally, he stated that New York City was in the peculiar position that by reducing consumption of its gravity supply, the immediate result would be to increase the excess flow in the Delaware River downstream, which returns no benefit to the city.

The Joint Venture Engineers made an additional recommendation, however, in the CPWA-27 report that really disturbs us in the Upper Delaware Region. It was pointed out that the city may divert up to 800 million gallons a day, and is required to make certain downstream releases consisting of a minimum basic flow requirement of 1750 cubic feet per second at the Montague Gauging Station, and an excess water release by a separate formula. The CPWA-27 study states that the basis for the 1954 Supreme Court Decision stipulating the various flows and diversions is the drought of 1929-32. The report goes on that the drought of the 1960's has shaken the validity of the 1930's drought as a basis for allocation of the Delaware water. Their resulting recommendations were:

"First, the excess release requirement should be eliminated. This will cause little cost to downstream interests and will merely hasten the inevitable."

"Secondly, the Montague formula should be revised in the original 1931 Supreme Court Decree. This would amount to a maximum release of 604 cubic feet per second from the Delaware reservoirs rather than attempting to have 1750 cubic feet per second at Montague. Such a reduction in release requirements would increase the amount New York City could withdraw from its Delaware facilities." And it goes on with these figures.

We are thankful that we have the Supreme Court Decision, and the Delaware Basin Compact to hinder the city in seeking such a change. This type of proposal indicates absolute disregard of environmental impact and the rights of others. The Delaware is not New York's private stream to waste or destroy. If this recommendation were carried out, the Delaware would be laid waste and destroyed further, in

the next drought, if not sooner.

We note that you studied the use of the Hudson River as a major new source of water supply for southeastern New York. Since the Hudson is so much larger than the Delaware, and since diversion of any additional water from the Delaware could seriously impact its continuation as a viable river, we heartily endorse this recommendation.

A summary is provided of the problems created by the present water management procedures utilized by the City of New York as taken from the Sullivan County Neversink-Delaware Study Commission Report, and there are eight considerations:

1. The Delaware and the Neversink Rivers are subject to erratic stream flows and water temperatures. There are wide fluctuations in water flows and water temperatures as measured on all three upper branches of the Delaware, particularly the Neversink River. Further, the Neversink River, in particular, is subject to excessive water diversion and minimum releases, so that in essence during the summer months, the maximum conservation releases become the minimum stream flow at the Neversink Reservoir.

2. The existing flow and temperature controls are inadequate. The flow control point located at Montague, New Jersey, does not adequately protect the individual stream flows in the Upper Delaware Basin. Realistic minimum releases should be provided at each of the three reservoirs to maintain a more constant flow on the Neversink, and the East and West branches of the Delaware. Although the Neversink has a minimum release specified, the amount of water is insufficient to maintain an adequate conservation flow during the summer months. The small conservation releases required by New York State at Pepacton and Cannonsville require revision to a realistic figure in addition to the Neversink releases.

3. The problems of the Upper Delaware and the Neversink Rivers are interrelated and inseparable. Because of the nature of the dams release works and the control procedures, any action on one directly or indirectly affects the other two.

4. The ecology of the Upper Delaware stream system has been damaged. High temperatures have caused a decrease in the trout population. Cold temperatures have discouraged fish species such as bass propagation. Bathing and similar water recreation has been diminished due to cold temperatures. Water fluctuations have changed the aquatic balance that previously existed.

5. The type of dam construction that permits water wastage provides no flood control capability. Modification of the dams to include upper level release works

is needed. Installation of flash boards to increase storage capacity and assist in flood control is essential.

6. Pollution is improperly controlled, especially on the Neversink. Enforcement of proper disposal procedures is necessary. However, increased flows from the Neversink Reservoir would dilute the pollution and provide some measure of tolerance.

7. The City of New York is wasting water due to lack of metering and leak detection. Implementation of an adequate management system would provide an additional 150 million gallons a day -- sufficient to correct many of the current deficiencies.

8. Although New York City is diverting water within legal guidelines, the court decisions that provide this authority were made with inadequate and insufficient expert advice. Time and events mandate a review of water diversion and release requirements.

I'd like to digress just a minute here. Possibly this has not been put up to you before but in the Sullivan County Study they reviewed the source of the recommendations for the conservation release flows. They were from the senior biologist in the old New York State Department of Conservation and he testified in subsequent court cases that these decisions were made arbitrarily, that he essentially did them without consulting anyone else. Obviously now, with hindsight, we see that they were too small, insufficient, inadequate.

Finally, in the report, he goes on to state that the Upper Delaware System, including the Neversink River, should be eliminated as a source of additional water diversion for any use, until a comprehensive environmental impact study has been completed.

Now, recommendations from this study considered within the purview of your study authority are as follows:

We solicit your support in our negotiating with the City of New York for larger, more even release flows, and more favorable release water temperatures.

Next, New York City must be pressed to adopt a water metering and leak detection system.

Finally, New York City and southeastern New York State must be encouraged to utilize a source other than the Delaware River System for additional water supplies. The use of the Hudson River seems obvious, especially after reviewing the comments in your study.

CHAIRMAN CONWAY: Thank you very much, Mr. Freda.

DISCUSSION

MR. GIOFFRE: *Mr. Freda, one question: The last statement you made was that there should be some encouragement given to using other sources of water supply. I think that we're aware of the fact that most of the water does come from up around the northern part of the state and that efforts are made to see what can be done with the Hudson River. But would you recommend that as an additional source of water supply?*

MR. FREDa: Well, the point that appeared to us with what information we can see is the Hudson River being so large appears like the next source. As a matter of fact, we'd like to see you relieve some of the present diversion from the New York City reservoirs, we who live on the river see this every summer. After all, the drainage basin in the Hudson River is much bigger than the source area in the Delaware River.

MR. GIOFFRE: *I think the question on metering has come up on many occasions. I know even when I was in Albany, and I spent about 13 or 14 years up there, the metering question has come up on many, many occasions. The big problem is the political end of it. I think that this Commission may well recommend metering in the City of New York, but you got the political end of it there where people just don't want to do it.*

MR. FREDa: We recognize this. Sullivan County is a small county. We're some 55,000 people along the whole upper Delaware Region. You have only 200,000 people in all of the five or six counties involved, both in New York and Pennsylvania, but that shouldn't be the central issue here, population versus the big population. You have a river that we feel is endangered. If it's abused any more it is endangered of not being a river any more. We see this every summer, we who live along the river. For example, last summer, from personal experience, I saw some visitor children cross the river, a section of the river, and where it was supposedly too deep and too fast for them. I called to them hoping that they would stop. They didn't and they waded across it without any problem. I wouldn't have believed it, but this is happening. It's getting worse each year.

The minimum releases at Montague are 1750 cubic feet per second. The excess

releases presently that have been reduced down from their original 2900+ -- they're down to 2290 at the present time. They're gradually being reduced each year. This is covered pretty well in your study, of course. You know as much about it as anyone, obviously, from what you read in the study but it is coming down each year as the water consumption in New York City increases without any additional supplies of water. When it gets down to 1750 cubic feet per second, we're going to be a dry river comparatively. We're going to have this drought situation almost every summer.

MR. ROBERT D. HENNIGAN, *Executive Director, Southeast Water Supply Commission:* *Mr. Freda, we're very familiar with the issues that you raise relative to the management and operation of the Delaware System. Also the city is not litigating a lot of claims in that area so I don't think it would be too appropriate to get into too much detail. Since you feel that the present managerial setup relative to the operation of the existing facilities could stand some improvement, have you got any specific recommendations or suggestions that you would make to this Commission in terms of institutional, regulatory changes. I think you've outlined pretty much what should be done. The question is who should do it?*

MR. FREDA: Well, within New York State, I think it should be the Department of Environmental Conservation. On the River Basin, I think that the DRBC should take a more active role in controlling this. Now, I've been to the DRBC. I've tried, I've briefed them, I've given them our problems down there also. The Director of the Water Resources Association, which is a civilian group, they are getting behind this thing right now and taking other action, going to the DEC and then to the DRBC and eventually the DBA for help. But to answer your specific question, I believe that within the state, New York State should have something to say here. Now, this, as you know as well as I do, is a very difficult situation because of the Supreme Court Decision. It's going to be necessary to come up with a lot more facts and figures and support than what I am giving you today, of course. However, we do feel that the whole situation needs review, especially when you go back and examine how did they get the minimum release figures. Now, even if these minimum release figures were evened out a little more so that you have a steadier flow of the river during the summer months, some flood control, this would help the situation tremendously.

MR. HENNIGAN: *Well, the weakness of the Supreme Court Decision from your point*

of view -- is the fact that the Supreme Court Decision is concerned with a flow at a point. It's not concerned or says nothing, as a matter of fact, about flow in any of those streams from Port Jervis to the existing impoundments.

MR. FREDA: That's right.

MR. HENNIGAN: *The only control at this time is the conservation releases which you mentioned and the operational requirements and practices in the City of New York.*

MR. FREDA: An extreme example here is the Neversink River at the Neversink Reservoir. We had a hydrologist who appeared as an expert witness before our study commission and bringing up a point, how much is 10 million gallons a day. This is the summer-time release from April through October. He likened this to two 55-gallon drums being emptied every second at the Neversink Reservoir.

CHAIRMAN CONWAY: *In your answer to Mr. Hennigan's question did you mean that the State Department of Environmental Conservation should take over the entire water supply of that region or just that they should have some regulatory function and concerns in connection with the conservation of it?*

MR. FREDA: Well, really, I'm talking about the determination of the conservation releases. Probably the control of the water supply and where it's taken from depends on some sort of super agency that we don't have as yet.

CHAIRMAN CONWAY: *That's what I'm suggesting.*

MR. FREDA: Yes.

CHAIRMAN CONWAY: *If you had to suggest it, would you suggest that it be on the state level, regional level, or multi-county level?*

MR. FREDA: I would suggest the state level because most of you folks from the eight counties in this southeastern area where you have the study but we folks in Sullivan and Delaware think we were left out. We have no place much to go for assistance.

MR. HENNIGAN: *Well, you're really part of the Commission's concern as one of the existing source areas. The Commission certainly isn't ignoring the present impact of the existing operation of the city. You can be sure of that.*

MR. FREDA: Well, I am sure of it in reading your report. It is gratifying to see the steps you've taken to get into some of these things in great detail.

CHAIRMAN CONWAY: *And also, although Commissioner Forster's professional life was spent in New York City, he is not a resident of New York City and, in fact, having had a very good satisfying sub-career as a conservationist from Upstate New York, and so not even all the members of the Commission are from the study area so we're very mindful of the problem. Thank you for your very understanding presentation.*

The next speaker will be Mrs. Carol Coggeshall, Vice-President of the League of Women Voters of Westchester County. Mrs. Coggeshall has been with us before and we're delighted to welcome you again.

PRESENTATION

MRS. CAROL COGGESHALL, *Vice-President, League of Women Voters, Westchester County*: Thank you. First of all, I would like to commend this Commission on the reports which it has been putting out in the last couple of years which I have received and the League of Women Voters committee has tried to study quite thoroughly.

I would like to say that we spent quite a bit of time preparing a statement for today's hearing and because this is the middle of the summer we were not able to get hold of the necessary people, the president is in Massachusetts and somebody else is in Cape Cod, and the League has a policy of not making public statements until it has been approved by a board and, therefore, we will send a statement to you at a later date.

I would just like to say too that we feel particularly frustrated by this situation because there are two other hearings that have been held during the summer by the New York State Department of Environmental Conservation. We feel that the summer is a very bad time to hold public hearings because many groups who would like to do a thorough study and be able to make constructive comments are just simply not able to because people are away.

In addition, this has nothing to do with you, but the New York State Department of Environmental Conservation has sent out notices of public hearings starting July 31st in Albany, a second hearing August 2nd in New York. I called the Regional Office in New Paltz last Friday to ask for the material. This is for proposed new and modified classifications and standards of quality for the waters of New York State. They said they do not yet have the material. They will send

it to me as soon as they get it.

The same thing happened with the New York State Environmental Plan. We had great difficulty getting the material in time to do any study on it and obviously this is going to happen for this other hearing and if you people have any contacts with anyone in Albany who could change the situation, we would be very grateful because it makes it extremely difficult for a citizens' group or groups to do a constructive job of comments at hearings of this sort.

Thank you.

CHAIRMAN CONWAY: *Thank you, Mrs. Coggeshall.*

The next speaker is Paul P. Brienza, City of Mount Vernon Water Department Superintendent, and I believe, Paul, you're appearing here in another capacity, aren't you?

PRESENTATION

MR. PAUL P. BRIENZA, *Westchester Water Works Conference*: Mr. Chairman, members of the Commission: My name is Paul Brienza, Water Superintendent of the Board of Water Supply of the City of Mount Vernon and Chairman of the Westchester Water Works Conference. The Conference is a non-profit organization founded in 1941 whose members are people engaged in the construction, operation and maintenance of water supply systems in Westchester County. The Conference's active membership of over 420 includes all Water Superintendents and/or Managers of water supply systems in Westchester, as well as other water works personnel, suppliers and consultants to the Industry.

The main objective of the Conference is to bring together the people interested in problems of water supply and distribution for their benefit and the benefit of the water districts they serve.

The Conference has followed the activities of this Commission from its inception. Many Conference members have provided background information on the many water supply problems of Westchester communities at a Commission meeting held on June 25, 1971, here in White Plains. Therefore, there is no need to reiterate these problems which have been documented in the publications of the Commission. Our Water Resources Committee, consisting of John Biros, Superintendent of Water & Sewers, Village of North Tarrytown, and James Neary, Water Superintendent of the City

of Yonkers, has also reviewed the seven Commission Reports that have been made public to date. In general, the Conference feels that the Reports have been well presented and represent a valuable library of information of great importance to the remaining work of this Commission and other future activities in water supply matters.

The Conference would like to emphasize to the Commission its concern with the two most pressing problems; one, the need for additional water and two, the need for improvements in water resource management and administration.

The local Westchester communities and water purveyors, as well as New York City and Long Island water systems, are capable of distributing the local water needs but must be assured of an adequate source of supply. The New York City System is relied upon as a major source for many of the water systems in Westchester County. We look to the Commission for guidance in implementing a water supply system and source capable of meeting the increasing requirements of New York City, Westchester Communities and other municipalities in the Region. There is a water shortage in the Region in spite of recent years of above average rainfall, and we feel that prompt implementation of a new source of supply is needed to avert a repetition of the severe problems of the mid-sixties drought.

The Conference, in general, supports the technical recommendations of the Comprehensive 5-A Study (CPWS-27).

We feel that the logical sequence is to use available supplies to their utmost capabilities by improving management techniques such as use of available computer technology.

However, we are not primarily concerned with the method and location of developing the source but would like to emphasize the critical need of a new supply. The new source should be developed promptly and be of adequate quantity and quality to meet the needs of the study area.

The Conference's other concern is in administration. We feel a change in the present administrative structure is necessary and imperative for proper management of the resource.

We strenuously urge this Commission to look favorably upon recommending an authority or another legally constituted regional management system to accept the responsibility of operating existing and future water storage and transmission facilities of the study area. Representation on this authority should include members with strong Westchester Water Works affiliation. We further urge that this regional management group be advised to follow an orderly development program

taking into account the effect on area supply, the proposed Tock's Island project, and the excess release requirements in the Delaware River Basin (we do not wish to supplant one area of available water for another).

The proposed agency or authority should be set up to administer the system with representation of all local upstate communities in the administrative structure. The problems of Westchester water suppliers in negotiations with New York City over rates, new connections, and per-capita restrictions are well documented. We look to the Commission to make recommendations for methods of obtaining new sources and arrangements for administration of the system that will alleviate the unfavorable position of Westchester communities and water purveyors in obtaining additional water to meet the continuing growth in Westchester County.

Thank you.

DISCUSSION

MR. GIOFFRE: *Mr. Brienza, I think you heard a statement made by a previous speaker. You would recommend that this be done on a statewide basis. Now, your proposal is that a special authority similar to the many authorities that we have in the State of New York be set up specifically for the purpose of endeavoring to try to operate the water supply system of the State of New York, am I correct in that assumption?*

MR. BRIENZA: Yes, you are.

MR. GIOFFRE: *Rather than have the state become directly involved or any regional area such as Westchester, Putnam, Rockland or New York where you have a regional concept. Now, would you favor an authority which would have control over the water system of the entire State of New York or would you localize that regionally?*

MR. BRIENZA: I would localize but I think it should be under state control.

MR. GIOFFRE: *Well, how specifically? How is this going to be operated? Is it going to be done on the statewide basis or is it going to be done on a regional basis? How is the best way to effectively operate such a system?*

MR. BRIENZA: Senator, I will call on one of our committeemen who has been very in this, Mr. John Biros, to answer this.

MR. BIROS: It is our report that it should be an authority, a state authority in a regional area, this study area, taking the existing system supplies, the Delaware River Basin and the Croton System, the Catskill System which is now being governed by the City of New York.

MR. GIOFFRE: *In other words, what you're trying to tell us is it should be an authority but it should be conducted on a regional basis rather than on a statewide basis.*

MR. BIROS: Right. We cannot speak for upstate communities around the Albany area, the Adirondacks and so forth. We're concerned with the study area, your Commission study area.

MR. GIOFFRE: *Yes, but then you have the problem that the water would have to come from the areas from Upstate. Now, how would that regional administration be able to have anything to say over waters coming from, let's say, the Delaware of Sullivan County area unless they're embodied in this region?*

MR. BIROS: Well, it is our thinking that the amount of water that is available to the study area should be apportioned by some authority that has not a leaning in one direction, not where the water comes from but the water available to the study area.

MR. GIOFFRE: *Well, how many such regions would you recommend in the State of New York.*

MR. BIROS: Well, it would seem to us that as the needs became imminent in other areas, this same authority could be expanded to include the area. At the moment the problem is in this area.

MR. GIOFFRE: *Well, the Commission has to make a recommendation and when the recommendation is made I'm sure it's got to be all-inclusive, it can't be just limited to one specific area. It's got to be a plan which has to be recommended and you can't say, well, you're going to have a region here and then you're going to have to say the State of New York is going to be divided into one, two, three, or four regions. Consequently, one region will be in the Western part, one in the Northern part, one in the Central part or whatever part you want to put it into but I think you've got to outline some sort of a plan, and it has to cover the entire state. I don't think you can limit it to just*

this particular area.

MR. CONWAY: *We have to cover all the interests and concerns of the water supply that's being used for this area. But, Mr. Viros, I have a couple of questions based on your testimony.*

First, the regional authority would just be concerned with supply or supply and distribution?

MR. BIROS: *Simply supply. Distribution, we feel, can be adequately handled by New York City, Westchester County, Suffolk, etc.*

MR. CONWAY: *I take it, in line with Senator Gioffre's comments would you suggest that the membership of that authority include appointments from the areas of the actual supply itself.*

MR. BIROS: *I think it would be appropriate, yes.*

MR. CONWAY: *And have you developed sufficient details as to how you would divide up the control on the authority between New York City and all the rest of the area? That's going to become a very critical question as you know if a regional authority is ever developed.*

MR. BIROS: *Obviously, it would be basically on the usage, the greater the usage the greater the voice.*

MR. CONWAY: *Well, if it's going to be on the usage, you might as well leave New York City in charge, because they would be in control of the authority, wouldn't they?*

MR. BIROS: *Unfortunately, this is the way it would tend to be.*

MR. CONWAY: *If we divide it up, how much water you use, you're going to be outvoted on any state issue. So I can't understand how you would have that answer on any regional authority.*

MR. BIROS: *This is true, but we do not feel that anybody that has that representation would take that approach. I don't know whether I make myself clear.*

MR. CONWAY: *Considering some of the battles we've had in the past, is that a realistic viewpoint or maybe public servants are just all improving in their objectivity.*

Mr. Biros has been before this Commission before too and he's always been

very helpful but any input on this type of structuring would be very helpful at this point in the life of the Commission because these are the really tough issues the Commission has to deal with. If you have a regional authority who's got control over it? How do you divide up the membership on it, and those are the tough issues and especially considering the amount of disproportion, the use of New York City of the supply.

MR. BIROS: All right. We did not delve into that matter that deeply and we will since you have suggested that we do.

MR. CONWAY: *Thank you very much.*

MR. HENNIGAN: *But what you are recommending to the Commission then is some type of regional agency which has the operational authority over the existing Upstate water supply elements that are now owned by the City of New York? And operated by the City of New York, plus any additional facilities which may come out of the recommendations of this Commission.*

MR. BIROS: Yes.

MR. CONWAY: *All right, thank you very much.*

The next speaker will be Mr. Padriac French, President of the Rockland Audubon Society.

PRESENTATION

MR. PADRIAC FRENCH: *President, Rockland Audubon Society: Good afternoon.*

The statement made today by Walter L. Fleisher, Jr., in behalf of the West Branch Conservation Association, is fully endorsed by the Rockland Audubon Society.

We particularly wish to underscore Mr. Fleisher's remarks on the "Hlyde Park Plan". We believe that the effects of this plan would be catastrophic to the Hudson Estuary, and that the environmental consequences must be studied carefully and impartially before any recommendation is made.

Thank you.

CHAIRMAN CONWAY: *Thank you Mr. French.*

The next speaker is Calvin E. Weber, Professional Engineer, Westchester County Department of Health, Assistant Commissioner of Health for Environmental Services.

PRESENTATION

MR. CALVIN E. WEBER, *Assistant Commissioner of Health for Environmental Services of the Westchester County Department of Health*: As a public health agency we are interested in the quality and quantity of water supplied to the residents of the County of Westchester, and to the establishment or enlargement of water supply and distribution systems to serve areas not served by such systems. We are further interested in promotion of water supply and distribution systems in areas presently served by either small community water systems or individual well water supplies, which in some cases are proving to be inadequate.

In order to realize the establishment and enlargement of such systems it is essential that a supply of water of satisfactory quality and in sufficient quantity be available to such systems. Your Commission is studying the water supply needs of the southeastern portion of our state and will be developing alternatives and recommendations for means to satisfy these needs and to help realize the interests of our department with regard to water supply.

The reports of the Commission issued to date are replete with information concerning the problems of water supply in the study area. These reports provide a wealth of essential information for evaluating the problems and developing alternatives and recommendations to provide for the water supply needs of southeastern New York.

As your reports indicate, the water supply needs of Westchester County are dependent upon limited ground water sources, municipally or privately owned surface water sources of limited capacity, and for the most part, the New York City reservoir and aqueduct system. It is apparent that the future water supply needs of the county cannot be fully satisfied by further development of water sources within the county.

We, and other jurisdictions in southeastern New York, are increasingly dependent on the development of upstate sources. It is hoped that the Commission, in its studies, will be able to recommend the development of upstate sources of water supply that will provide for human needs for water supply and be environmentally compatible with the area in which developed. Prompt development of such sources of water supply is essential to meet present water supply needs and to prevent a crisis situation should a drought similar to the one experienced in the mid-sixties re-occur in the near future. While we have had above average rainfall in recent years

we must not allow ourselves to be lulled into a feeling of complacency until it is too late. I am sure that the Commission will not permit this to happen.

With regard to the development of upstate water sources, or any other water source for the southeastern area, it is strongly believed that the responsibility for operation and administration of such source, or sources, should rest with an agency independent of any of the jurisdictions served. Such agency, with representation from the southeastern area, the area from which the source is derived and other representation as appropriate, should concern itself with providing water to those jurisdictions served on the equitable basis of need and in a manner so as to avoid the problems experienced in the past, which problems are documented in your reports.

In addition to developing recommendations for new sources of water supply and its distribution it is hoped that the Commission will develop recommendations for methods of water conservation. Many of our water using devices or processes could, with careful re-evaluation and re-design, produce the same desired end with less water than presently used. Such reduction in water usage would not only assist with water supply problems but would serve, in many instances, to reduce wastewater loads on wastewater treatment facilities. Industry when faced with the need for and high cost of wastewater treatment has demonstrated that water consumption can be reduced without impairment to their operations.

Your reports clearly indicate that water supply is now provided by a myriad of municipalities and water districts, many operating completely independently of each other and with either no means or inadequate means of assisting each other with water supply in times when one has sufficient water and another has not. There is a need for consolidation or regionalization either on a municipal, county or regional basis to eliminate problems of duplication of facilities, equipment and services, and to provide for more equitable distribution and utilization of that valuable resource - water.

The Commission has before it a huge assignment; that of evaluating the water supply needs of our area and developing alternatives and recommendations designed to meet these needs. We look to you, with high expectations, for the answers, and hope that our brief and general comments and those received from others during these hearings will assist you with this assignment.

CHAIRMAN CONWAY: *Thank you very much. The next speaker will be Mrs. R. L. Jessup, Conservation Association of Rockland County, member of the Board of Directors*

of that Association, Monsey, New York.

PRESENTATION

MRS. R. L. JESSUP, *Member of Board of Directors of the Conservation Association of Rockland County, Monsey, New York:* First of all, I'd like to say that the people in our conservation association often wear many hats and sometimes when our members are not able to attend hearings such as this, some of the rest of us jump in and fill the bill and that is what I am doing today because I'm reading a message from the Adirondack Mountain Club, the Ramapo Chapter, and it is from one of our Board members, Mr. Ira Hedges.

"The Adirondack Mountain Club, Ramapo Chapter, wishes to go on record in support of the statement presented at this hearing by Walter L. Fleisher, Jr."

"We believe that the Commission has become trapped by the notion of inevitable growth, as well as the projection of increased water consumption per capita. This is very reminiscent of the self-fulfilling prophecies of the utility companies.

"When an area is developed beyond its capacity to support that growth, in terms of environmental balance, the quality of life is greatly diminished for all who live there.

"To underscore Mr. Fleisher's words, we urge the Commission 'to take a fresh approach to water supply problems by integrating them into the overall environmental scheme.'"

It's signed by Betty Hedges, Old Route 202, Pomona, New York.

CHAIRMAN CONWAY: *Thank you very much.*

The next speaker will be Mrs. Robert W. Pugh, Rockland County Conservation Association and other organizations. She is Vice-President of the Rockland County Conservation Association, Spring Valley, New York.

PRESENTATION

MRS. ROBERT W. PUGH, *Vice President, Rockland County Conservation Association:* The Rockland County Conservation Association has a membership of about 350 residents who represent every area of the county. Members of the Association and the Board of Directors have kept in close touch with the activities of the Commission and we have

familiarized ourselves with the publications. Our statement today asks that the Commission consider four items that we consider necessary to protect our water resources.

(1) The Commission should recommend that Rockland County have an updated Comprehensive Water Study.

Rockland County is characterized as a self-contained unit by its unique geographical boundaries on two sides and the State of New Jersey on the third. The conclusions reached by the Commission's study indicate that our county can meet its water needs with "in county projects" through the year 2020. The major portions of the yield would be furnished by a Ramapo pumped storage project and the additional well activity of the Spring Valley Water Company. It appears that the Commission has reached these conclusions from the Comprehensive Water Supply Study of Rockland County, CPWS-G7.

We question the validity of this study for determining where the county will get increased water supply. We call your attention to the conflicting statements in your publications as to the source of our underground aquifers, the testimony indicating the variety of geologic formations, the fact that the Ramapo project requires out-of-county storage facilities, the statements often made at local hearings that all well digging is a matter of conjecture as to the ultimate results in the county and the fact that observation wells have never been monitored by the Department of Environmental Conservation.

We believe that CPWS-G7 is lacking in a definitive analysis of Rockland County's water resources and ask that the Commission make a careful review of CPWS-G7 to determine how many of the conclusions reached are by conjecture and how many by fact-finding and research. It does not resolve the controversy of the Mahwah River which no time since the memory of the residents that live along its banks has the river run dry until there was extensive well drilling at its source. Yet downstream, the Mayor of Suffern reports that in drought years of the 60's "we had more water in the wells than in normal times."

Our second recommendation: The Commission should submit an Environmental Impact statement of any project that it proposes.

Our Association endorses the testimony of Walter Fleisher of the West Branch Conservation Association in which he has explained the carrying capacity of the land. We concur with him that we do not have to accept the inevitable growth pattern and we

need the help of the Commission to establish environmental guidelines and to urge local planning groups to take responsibility for placing water resources as a primary factor in determining projected population growth.

The Study has omitted the environmental impact assessment of almost all of the projects that it proposes for bringing more water to the southeastern part of the state. We deplore the casual attitude taken toward changing the salt intrusion of the Hudson and agree with Mr. Fleisher that comprehensive research must be outlined before so drastic a measure is proposed.

Our third suggestion: The Commission should recommend that Rockland County should review its sewerage plans and emphasize the need for water reclamation.

The recent delay in the acceptance of Rockland County's Sewer District No. 1, Stage 3 program gives planners time to include reclamation projects in this phase of county sewerage. We find one advocate, Mr. Hennigan, who asks whether it has concerned anybody in Rockland County this was, that a sewer system will also be a land drainage system. Yes, it has concerned our Association as our testimony at frequent hearings will indicate. But at the hearing of the Commission you were reassured by a Rockland County official that it doesn't seem to be a potential problem at this time. It is our hope that the Commission will continue along the line of Mr. Hennigan's questioning and not accept the casual assessment of the impact if the two current Rockland County Sewer Studies were ever implemented. Neither study makes any provision for water reclamation -- a relatively simple project by use of the headwaters of Lake DeForest. A County Sewer Study that was reviewed by the County Legislature within the last year calls for sewerage a population of 600,000 to the Hudson and makes not a single provision for water reclamation. The Commission could give us some needed help here by its insistence that water is too precious to be wasted as this Study recommends.

We would very much appreciate the Commission using the prestige of its position to stop the endless cycle. The Rockland County Planning Board published a Land Use Plan, the data of which is based on CPWS-67 which needs updating which is referred to in the County Sewer Studies and so on ad infinitum. The County's Land Use Plan was published in 1973 and will be quoted for years; yet it has based its conclusions on Studies that are obsolete. Thus plans that are no longer valid are given authority by repetition.

Fourth, the Commission should recommend the effective use of existing water supplies before new sources are tapped. And here I quote the Environmental Plan

because it states it so well. "It would be irresponsible resource management to assume that projected trends in increased water use will or indeed should actually take place. In large part, present data are built upon experience in an era of cheap, plentiful water, with little or no incentive for industry as a user, or industry as a producer of water-using goods, or the homeowner, to consider immediate or ultimate water needs.... Estimated needs often were not critically questioned, nor did the possibility for metering, leakage control, rates to discourage use, better use of existing storage, water recycling or other conservation measures receive much attention."

Thank you.

I also have a short letter from the Tomkins Cove Association, Tomkins Cove, New York. This is a local civic association in the northern part of Rockland County and it comes from Daniel Tomkins, the President.

"Members of this Organization have reviewed a statement by Walter L. Fleisher, Jr., Vice-President of the West Branch Conservation Association to be read before you on July 18th, 1973.

"Upon the recommendation of these members this Organization requests that it be recorded in your minutes that we endorse Mr. Fleisher's statement and his conclusions and recommendations."

CHAIRMAN CONWAY: *Thank you.*

MR. GEIOFFRE: *Looks like Fleisher is the expert in your area.*

MRS. PUGH: Well, Mr. Fleisher has met with all of us and did prepare the opening statement. We feel he has a great deal more expertise than many of us.

CHAIRMAN CONWAY: *The final speaker will be Marcus Granirer, President of the West Branch Conservation Association, New City, New York.*

PRESENTATION

MR. MARCUS GRANIRER, *President, West Branch Conservation Association, New City, New York:* Actually I'm here to give you a statement that somebody gave me to give you as well as to endorse Walter Fleisher, the Vice-President of our group.

I've been given a letter but I would like to point out something first. When Mr. Fleisher responded to Senator Gioffre inquiring whether Rockland County was too

good to drink the Hudson River water, he pointed out that we were concerned with the salt front being above Rockland County and another point that he made then, there was one point that we've been stressing in our material that I think is quite important. The reason we think Rockland County isn't going to be able to use the Hudson River is really a matter of the time-table according to the projected needs for Rockland County. If we go along with the population projections that we're told we must accept, Rockland would exhaust its local supply as we believe, by the time of the next drought which may be 10, 15 years, and we doubt that the Hudson River plan, the Hyde Park scheme, could be on line at that time. That's why we're talking about Rockland County separate from the Hudson River.

I've been asked to read a statement from the Conservation Advisory Council of the Town of Stony Point, Stony Point, New York.

"Attached are past letters indicating the concerns of the Conservation Advisory Council of the Town of Stony Point, N.Y. in relation to water supply and particularly to the management of Cedar Pond Brook.

"The Stony Point Planning Board is now in the final stages of developing a Master Plan for the Town. A major goal of this plan is the preservation of the Cedar Pond Brook and its environs.

"The plan is to establish a 'green belt' along the entire course of the brook.

"The management of the water sources to the brook is of critical importance at this time and in the future.

"The Conservation Advisory Council feels that careful consideration be applied now and toward any and all future plans for the water sources to Cedar Pond Brook.

"Very truly yours,

"Donald C. Phillips, Chairman."

Thank you.

CHAIRMAN CONWAY: I want to thank each and every one of you, not only for the very thoughtful and excellent presentations that we had this afternoon, but also the members of the press and the interested parties that came to hear what was said. I think it's been a very constructive, valuable hearing. I assure you it has been for the Commission and we hope it has been for each of you.

Thank you very much.

ATTENDANCE

PUBLIC HEARING WHITE PLAINS NEW YORK

SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

E. VIRGIL CONWAY, *Chairman*
HERMAN FORSTER
ANTHONY B. GIOFFRE
WILLIAM C. BORGHARD, *Representing James C. Harding*

STAFF

ROBERT D. HENNIGAN, *Executive Director*
EMANUEL BUND, *Counsel*
DAVID E. BUERLE, *Director of Management Studies and Analysis*
IRENE W. BAKER, *Public Relations*

SPEAKERS

Henry S. Moyer, *723rd International Rotary, Committee Chairman, Scarsdale, N.Y.*
Walter L. Fleisher, *Vice-President, West Branch Conservation Association*
Matthew J. Freda, *Representative of the Sullivan County Environmental Management Council and Member of the Sullivan County Neversink-Delaware Study Commission*
Carol Coggeshall, *Vice-President, League of Women Voters of Westchester, Co.*
Paul Brienza, P.E., *City of Mount Vernon Water Department Superintendent*
Padriac French, *President, Rockland Audubon Society*
Calvin E. Weber, P.E., *Assistant Commissioner of Health for Environmental Services of the Westchester County Department of Health.*
Mrs. Robert W. Pugh, *Vice-President, Rockland County Conservation Association*
Mrs. Robert W. Pugh, *(Reading a statement of the Tomkin Cove Association)*
Marcus Granirer, *(Reading letter of Donald C. Phillips, Conservation Advisory Council)*

PROCEEDINGS OF PUBLIC HEARING
NEW YORK CITY, NEW YORK

OPENING REMARKS

MR. JAY P. ROLISON, *Commissioner*: We'd like to welcome you to this public hearing of the Temporary State Commission on the Water Supply Needs of Southeastern New York. I'm Senator Jay Rolison from Poughkeepsie standing in temporarily for our Chairman, Mr. Virgil Conway, who will be here shortly. Senator Rolison then briefly outlined the work of the Commission to date.

Now I will turn this over to our Chairman, E. Virgil Conway who has just arrived.

MR. E. VIRGIL CONWAY, *Chairman, Southeast Water Supply Commission*: We certainly appreciate each and every one of you coming today. We see many people in the audience who have been with us before and we thank you very much for your help on this project.

The first speaker today will be Martin Lang, Commissioner, New York City Department of Water Resources.

PRESENTATION

MARTIN LANG, *Commissioner, New York City Department of Water Resources*: At the outset, let me express the City's wholehearted agreement with the objectives of the Temporary State Commission on the Water Supply Needs of Southeastern New York and commend the Commission and its staff for the thoroughness with which the study is being conducted.

That there is a great need for additional sources of water supply to meet the requirements of Southeastern New York, and that surface and ground water sources must be integrated in determining these requirements, has been recognized by the study group. We subscribe fully to these policies and urge most strongly that supplemental sources of supply be developed with dispatch in order to avert water crises.

We must take issue, however, with your findings regarding New York City's projected water requirements to the year 2020 as set forth in your reports entitled, Scope of Public Water Supply Needs dated November 1, 1972, and Second Year Report dated March 1, 1973.

The reports make a distinction between needs and consumption defining needs as "a direct function of water requirements," and consumption as, "the amount of water actually consumed" which "is a function of needs as well as other factors such as leakage, waste, and availability of water."

As the City agency charged with the responsibility of furnishing a potable supply of water to the people of the City of New York in sufficient quantity to meet their requirements with ample reserves for the future, we must be realistic and project the water requirements on the historical consumption pattern and not on a theoretical trend method. Thus, our projections of New York City's consumption to the year 2020 are much higher than those shown in your reports. In fact, your reports indicate, for example, that in 1980, based on "middle projections," New York City will need 1325.5 MGD; actually in 1972, the consumption was 1410 MGD and our estimate of water demand in 1980 is 1490. Similarly, your projections for the years 2000 and 2020 are 1459.6 MGD and 1602.3 MGD respectively; whereas our estimates for those years are 1690 MGD and 1890 MGD respectively.

We feel that your staff has underestimated the projected water use in New York City and should re-examine its philosophy of "Needs", versus "Consumption". Since

New York State is blessed with ample sources of supply, the citizens of this City do not want to curtail their water use and are willing to pay for a supplemental supply.

We wish, at this time, to appraise the Commission that New York City is about to take a decisive step towards ultimate universal metering of its water consumers. We have prepared legislation which will be introduced shortly in the City Council to meter all new construction and those buildings where renovation will take place at a cost of over \$100,000. We hope that by the proposed legislation, which may seem to be a modest beginning, we will achieve ultimately our desired goal of complete metering.

We are eagerly awaiting your final report in December 1973, which will recommend new sources of supply for the entire Southeastern region of New York State. Thank you.

DISCUSSION

CHAIRMAN CONWAY: *Thank you Commissioner Lang. As you correctly point out, our report projects a consumption in 1980 that is below what you're actually using today, would you please expand on your objection.*

MR. LANG: I was addressing myself to the distinction made between needs and consumption. Your staff defines "consumption" as the amount of water actually consumed, which "is a function of needs as well as other factors such as leakage, waste and availability of water." The implication is, that if more water is available people will utilize it more freely which is something they decry and, therefore, would like to limit us to a theoretical need.

CHAIRMAN CONWAY: *Hasn't this idea of "needs" versus "consumption" been proven in every drought situation?*

MR. LANG: In the drought situation of the 1960's, by dint of the city using every means at its disposal; surveillance, exhortation, appeals to public conscience, use of the media--they were able to trim off some 200 million gallons per day of the rate of consumption. Nevertheless, there's been a slow inexorable upward trend and, the life style of society is such that apparently affluent societies just tend to use more water. It's not a New York City phenomenon. I'm sure that your staff has given you the per capita requirements of some of the upstate counties, of

Nassau County, and it would be very refreshing to contrast those with New York City. Sometimes people tend to think in terms of cliches. New York City, a rapacious user and abuser of water supply. It just isn't so, but it's like any other major megalopolitan urban center; its needs for water seem to be going up. In fact, there is not that much divergence where we take issue with you on these projections. We're talking of a divergence of something in the order of 200 to 250 MGD at the year 2020 and our precision and extrapolations may not be that good. In other words, in a total water usage approaching two billion gallons a day, we shouldn't be engaged in squabbling about extrapolations that might diverge something in the order of 200 million gallons a day in the year 2020. So I would not want my presentation to emphasize divergencies between the city's thinking and your staff's thinking. The main thrust of my presentation was the very first few paragraphs where I emphasized our hearty endorsement of your approach, our eagerness to get this report out. I don't want to impose on your patience or unduly prolong my presentation, but I'd like to convey to you, sir, that the past track record of getting new sources of supply on hand; and you have a distinguished gentleman here, Mr. Forster, who lived through all this and can inform you, was in the order of 30 years between concept and actual fruition. Your staff is homing in on the urgency of the situation which shows that we can ill afford such a long lead time here in Southeastern New York.

We just decry the year's delay in eventually getting out your final report, although we realize the enormity of the task confronting the Commission and again, we would be naive not to think that after your report is promulgated that it will not trigger off a series of great debates throughout Southeastern New York; upstate versus downstate, suburban counties versus New York City, etc. We know that it's inevitable but we'd like to see this process started as soon as possible because we think that some rationale will prevail. As your report says, and I wasn't using just rhetoric there when I said that New York State is blessed with ample sources of supply, your staff report confirms it, so I'm sure their report will solve the question of distribution.

CHAIRMAN CONWAY: *As you point out, Commissioner, there are many, many knotty issues. I think it's to the great credit of yourself and your department that we have received such tremendous cooperation. I think you put it very, very well when you pointed out that this Commission may not solve some of these*

questions because they are really issues on which there are arguments pointing toward several alternative solutions. However, we will raise the issues that may lead to the resolution of these very complicated technical, political, economic, and social, in the broadest sense of the word, issues. Moving on, how do you feel about the various proposals for the regionalization of water supply management in the southeastern area?

MR. LANG: Well, you know, Mr. Chairman, I'm not a politician. That means I'm not running for anything. It also means I don't run from anything including even tough questions, but in this case, I think it would be downright presumptuous of me to engage in speculation on the real knotty problem that's going to confront this Commission on the institutional arrangements that will have to be implemented in the region. It brings up so many issues. It brings up issues of sovereignty of government institutions, towns, villages, city, counties. It brings up fiscal responsibility. It brings up the tremendous value of our existing resources in hand. It brings up questions such as where is the greatest body of expertise now extant in building such works, operating such works and maintaining such works. These, I am sure, are the sort of things that will surface after the generation of your report. So while I'm never prone to duck anything, in this case I say it would be almost presumptuous of me to make any comments in depth on that.

CHAIRMAN CONWAY: *Another question I had because it has been such an issue throughout the study of the Commission, particularly with many conservationists is recycling or water reuse. What is your opinion on the use of this technical alternative to meeting the projected deficits.*

MR. LANG: Well, again the sources of material available to you are the same sources that I have considered. Like your staff, I have watched the Lake Tahoe experiment, and Santee, California. I'm sure you have been as interested as we have in the Nassau Bay Park experiment which is not to recycle but to get water of a satisfactory quality so that it is amenable to injection in the ground to create a hydraulic barrier against salt water intrusion into the groundwater. The techniques of desalinization and all these variations our staff has been watching, reading, and assessing the journals on exotic things like reverse osmosis and electrodialysis. However, we agree with your staff decision when it realizes that when you make hard decisions you have to make them with the technology here and now proven and not by

extrapolating table top pilots into the 21st century.

I suppose that every facility we build is obsolete the day we build it. On the other hand, some people keep seeking the ideal solution and restudy a project every few years which is one sure way of not building anything. But your report confirms our feeling that the present needs are here now and that they are acute. We don't have to speculate about the safe yield. We lived through the drought situation and since the lead time between concept and actual operation of a facility has been on the order of 30 years; it would be a tremendous task for your Commission to compress this time span into 10 or 15 years. The urgency is so great that we cannot afford to keep pursuing these tenuous speculations. It is true that desalinization is used in a spot situation at great cost when there is nothing else available, but when you start extrapolating that to the needs of a megalopolitan complex with 12 million to 13 million thirsty consumers, you have to revert back to a solid system of impounding surface water with which New York State, fortunately, is blessed.

CHAIRMAN CONWAY: That was very, very well put in my judgment. Thank you very much.

The study project that was initiated prior to this Temporary State Commission and is still continuing is the so-called NEWS study, Northeastern Water Supply Study, being conducted by the United States Army Corps of Engineers. This has been a most valuable input as far as our own Commission is concerned. It covers, of course, a much wider region than our Commission is concerned with, but it has been helpful. We have studied their preliminary reports in great detail and have joined in many conversations both informal and formal. Kyle Schilling, the project manager of the NEWS study is here today and he will be our next speaker.

MR. KYLE SCHILLING, *Northeastern Water Supply Study, U.S. Army Corps of Engineers*: We really have no formal statement as an organization prepared for the hearing, but I would like to state that at the staff level we have been very, very pleased with the cooperation evidenced by the staff of the Commission. We were very pleased with the capabilities of the people on the staff. We have enjoyed, I think, the most harmonious of working relationships and we too are looking forward with a great deal of anticipation to the publication of your final report. But I can't make any formal statement for the Corps.

Thank you.

CHAIRMAN CONWAY: Well, I see no further speakers so we can adjourn. I think it bears repeating that this Commission has received tremendous cooperation from the City, from the federal government, indeed from other states and other state commissions. This is the type of relationship that should exist if we're to solve these very important problems and they can only be solved by this type of cooperative effort. I again thank everyone who's had anything to do with it. You made our job much easier than it could have been under other circumstances. Thank you for being with us this morning.

The meeting was adjourned at 11:25 a.m.

ATTENDANCE

PUBLIC HEARING NEW YORK, NEW YORK

SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

E. VIRGIL CONWAY, *Chairman*

HERMAN FORSTER

NEIL H. ANDERSON

JAY P. ROLISON

WILLIAM J. SCHICKLER

JEREMIAH R. DINEEN, *Representing James C. Harding*

STAFF

ROBERT D. HENNIGAN, *Executive Director*

EMMANUEL BUND, *Counsel*

PAUL W. MERKENS, *Director Engineering Studies and Analysis*

DAVID E. BUERLY, *Director Management Studies and Analysis*

IRENE W. BAKER, *Public Relations*

JACK K. KRANIS, *Assistant Counsel*

SPEAKER

MARTIN LANG, *Commissioner, Department of Water Resources of the Environmental Protection Administration, City of New York*

KYLE SCHILLING, *Northeastern Water Supply Study, U.S. Army Corps of Engineers*

PROCEEDINGS OF PUBLIC HEARING MINEOLA, NEW YORK

OPENING REMARKS

MR. E. VIRGIL CONWAY, *Chairman, Southeast Water Supply Commission*: I'd like to call this meeting to order. (The Chairman then introduced members of the Commission and Commission staff and briefly outlined the Commission's findings.) The first speaker will be Mrs. E. E. Post, Action for Preservation and Conservation of the North Shore of Long Island, from Huntington, Long Island.

PRESENTATION

MRS. E. E. POST, *Action for Preservation and Conservation of the North Shore of Long Island*: Action for the Preservation and Conservation of the North Shore of Long Island Incorporated is speaking about the fresh water resource of Long Island only. This is a unique and self-contained supply, coming as it does from aquifers which are refilled only by water filtering through the ground. It is a totally different source of water than any other in the state and it must be treated differently.

Our systems, both of supply and of sewage disposal, cannot be considered as interdependent with any other system.

There is one outstanding fact which must be no longer ignored not only on this Island but also countrywide. We must not waste water. As with all our other natural resources, the supply is limited, though locally for us renewable. Pouring

out so much effluent through large outfall pipes into Long Island Sound and the ocean is throwing water away and will ultimately use up the water table.

There must be immediate funding for research on the treatment of sewage effluent so that all impurities including the nitrates and viruses can be removed and the water recharged. The land best suited for recharge should be purchased now and set aside until sewage treatment is perfected. Sewage plants on Long Island, instead of being huge, must be built on the scale appropriate to recharge. A porous surface should be placed on parking areas to decrease runoff and runoff water from roads, and parking lots should be cleansed and recharged. If we continue on our present course allowing unchecked population growth, paving and wastes, the effect on Long Island will be disastrous. Not only will we be without one of the best water supplies in the world but all our streams, ponds, and lakes will vanish and the salinity of our coastal waters change so that our wetlands and bays will be unproductive.

DISCUSSION

CHAIRMAN CONWAY: *Mrs. Post, thank you for an excellent presentation. It's a very thoughtful comprehensive statement that capsulized most of the problem that exists on Long Island. One of the areas that this Commission is reviewing is to put secondarily treated effluent in the recharge basins. Do you think this would be acceptable in the various communities?*

MRS. POST: I think it's going to have to be. After all, in other communities people drink refurbished sewage. If it goes through the sand into the aquifer it's going to be pretty well cleansed anyway and it's going to be a long time before it gets back into our pipes.

CHAIRMAN CONWAY: Thank you again Mrs. Post.

The next speaker is Robert E. Reid, Town of Brookhaven Councilman from Patchogue, New York.

PRESENTATION

MR. ROBERT E. REID, *Town of Brookhaven Councilman from Patchogue*: The Town of Brookhaven, is one of the largest townships in the State of New York. It exceeds Nassau County in area and is one of the fastest growing areas in the state. Twenty years ago we had a population of about 44,000 people and today we have 300,000. We

are seeking to somewhat slow that growth but this is, I'm afraid, a difficult thing to achieve.

We want to respond to the question of how the water supply needs of Southeastern New York can be met in a timely and economically feasible manner, a manner that is technically feasible and that is economically, socially, politically and environmentally acceptable insofar as it applies to the Town of Brookhaven. The further opinion is that this response is valid for the balance of Long Island.

It is our conviction that the foreseeable water requirements of Brookhaven town can be met by recharge of sewage. We are opposed to the present Suffolk County plan to remove the liquid portion of sewage by discharge into our surrounding salt water bodies of water. This will simply take off water which could otherwise be recharged. The Town of Brookhaven is presently supporting (at an eventual cost of about half a million dollars) at the Brookhaven National Laboratory the development of a system which will allow the recharge of sewage with out contamination of the environment. It is our conviction that the system will be developed in the next three to five years which will be timely and economical to the point of least necessary energy input.

There is no question but what this plan will be socially, politically and environmentally acceptable. We urge that until the development of efforts leading to the above system are concluded that no further sewerage plans which lead to the continued depletion of Long Island water resources be allowed, and we believe they are not necessary. We believe that this system will be developed within this period of time, proven feasible on Long Island, particularly Brookhaven town.

DISCUSSION

CHAIRMAN CONWAY: *Thank you, Mr. Reid. What is the status of this project at the present time?*

MR. REID: We have just started within the past few days to actually spray sewage effluent upon the land at Brookhaven Laboratory. Some time has been taken in reaching that point but we have now started to do this. Mr. Maxwell Small, of Brookhaven Laboratory, who would like to make a brief statement also is with me. We have a series of technically feasible or competent people to monitor this and we have a number of agencies assisting us in monitoring not only the pre-existing condition before we started to spray but to continue to monitor it during the entire period of time that we're under this program.

CHAIRMAN CONWAY: *Is this just basically a spray system in a field?*

MR. REID: It's in a number of areas that I think Mr. Small can describe in more detail, and I think it would be useful to do different areas with different methods with examination of different types of equipment. It is an expansion beyond that system which has started and been underway at Penn State University for ten years. They have been successfully doing this sort of work with secondary effluent at the rate of over 400,000 gallons a day so that it is not completely an experiment except that we're going simply beyond what they're doing to determine what is the best way for Long Island with our particular soil conditions and climate. We are most hopeful that this sort of a system will do a number of things: It will recharge this water without dumping it into the ocean, without mining our existing water supply; that it will cleanse it completely all the way through the living filter, and that it will also be a tool to the town in the development of land use in the township by taking out of circulation the requisite number of acres of land for the use for this purpose.

We have a number of objectives in mind, each of which we think alone is a satisfactory objective, but when we add one on top of the other, we think if it's successful it will be a very fine thing for our township.

CHAIRMAN CONWAY: Thank you very much, Mr. Reid. The next speaker will be Mr. Maxwell M. Small, Brookhaven National Laboratories, Federal Projects Manager, Upton, New York.

PRESENTATION

MR. MAXWELL M. SMALL, *Brookhaven National Laboratories*: I'm here at the suggestion of the town and also as a result of my own and the Laboratory's motivation to respond to what has appeared in issuance from your Commission, Mr. Conway, that more research is necessary, and research is our business. In this particular instance, I don't think too much research is necessary. It's a matter of developing that system which is necessary for Long Island to recharge our water table. Our objective is not to argue conventional sanitary engineering practices or the cliches of the game if you will, but to evaluate those processes which are necessary, starting with the very rudimentary process to develop that system which will result in recharge of a maximum amount of water to our area with a minimum amount of artificial treatment.

We have started after many trepidations and public health questions. We have a three-to five-year program which is jointly an Atomic Energy Commission program and a Brookhaven town program. I mention the Atomic Energy Commission because they are responsible for the Brookhaven National Laboratory site. We are a federal enclave. We can do all kinds of experimentation utilizing a 5500-acre site which is pristine in large measure. Only about 250 acres of it are actually devoted to conventional housing, laboratories and so on.

Now, I would like to impress on you the fact that we are taking a new tack on this in many ways. We are not disinfecting. We are taking secondarily treated sewage. We are not taking any more than rudimentarily primarily treated sewage which means aeration only. We are blending this aerated sewage with cesspool pumpings, spraying, monitoring the results today.

Now, we think that this monitoring we are capable of doing, we think our data will be accepted because of the review committees, disciplinary reviews, microbiological reviews, the biological reviews, the medical reviews, the Public Health Service reviews, that we have insisted on as companions to this project as the data are developed.

Our objective again is to develop that system which will provide this recharge. I again would like to appeal to what you have said and what I have read of what you have that research is necessary. We are doing it. Please give us a year, two years, three years before you start pumping all of our aquifer into the ocean, would be my appeal.

We are attempting five different approaches at the outset. One is to spray in a mature pine forest. This is a mixture of Long Island red pine, slash if you will, scrub pine and white pine. We are spraying two blends of sewage, one equivalent to primary treated sewage, one equivalent to essentially non-treated sewage.

Now, in the forests, intuitively, before we begin, we think there won't be too much trouble with aerosols from drift, from contamination from spraying in the air, so we have two forest installations. One is the pine that I mentioned. Another is a mixed oak and pine perhaps a 50-year forest which, as far as Long Island is concerned, is almost a climax forest. This is a second group. Again the same two blends will be sprayed and on each of these plots will be a control bottom on which nothing will be sprayed so that we can determine by measuring that which comes down through the zone of aeration between the surface of the soil and the water table what is deposited in the way of contaminants.

A third plot would be what we call an old field. If you've been a farmer on eastern Long Island and you've been convinced you should give this up and retire to Florida and you would abandon your fields, certain things will grow there in the way of pucker brush, weeds, wild grasses and so on. We are letting one field which has now been a year and a half out of cultivation go to whatever comes naturally, again with three applications, one a control with no sewage application, second a one-acre plot with very rich sewage, the third a one-acre plot with very weak sewage. These might be roughly equivalent to the effluent from a primary plant or a secondary plant as they are now conventionally described by public health engineers.

The fourth installation is the same setup, a control, a primary, a secondary on a field of grass. We chose timothy because it seems to respond a little more readily. We have a field of timothy that is going through this same routine. We're trying a fifth installation which is, as nearly as I can make out from the literature, big and novel and that is to create a fresh water marsh. I was amused a few weeks ago to discover the difference between a marsh and a swamp. I would be curious as to anyone in the room knows the difference between a marsh and a swamp. I didn't, but a swamp is a marsh with trees in it, I understand, at least by definition so we have no trees in this but we have cattails and fish, lily pads and the rest of it.

Now, a marsh is naturally eutrophic, and therefore will absorb nutrients. One of the great worries is what happens to the nutrients. There are several zones that this spray goes through; it goes into the air, comes down to the foliated areas, down through the root zone and then you go down through feet of sand filtration, something has to be taken out and the data on what are taken out in these various processes are almost non-existent. In this sense, we consider this a research project because we want this data. We want to know what happens in the air, at the foliage level, the foliage-air-ground interface, through the root system, below the root system, through the zone of aeration before you hit the water table, and finally what hits the water table.

Now, as far as the fresh water marshes are concerned, we have a combination, five combinations, meadow marsh, all completely contained systems underlain with 20 film polyvinyl chloride impermeable membranes. These will be recirculated systems so that we can define what is going in, what comes out on the tail end, should we put it back through and try it again and again and again, or has it been

cleared up the first time through or the second time through or the third time through. As far as we know, this has never been done before.

The fascinating application here is if you can take a natural fresh water marsh, of which there are a number on Long Island, and actually use it because of its highly eutrophic characteristics, to filter contaminants out of sewage. We would like to know whether you can or cannot. If you can, this is a strong plus for water recharge because the removal possibilities are factors of 10, 100, 1000 in theory, but no one has the answer.

In addition to this, we have a contract from an agency which reports to the Surgeon General's command, to investigate that type of recharge spray rate hardware which will create the minimum of aerosols. The theory here is that if you take the conventional farm spray rig, you're going to lose a large percentage of what is put into the air through evaporation. This doesn't achieve the objective of recharging the maximum amount of water. Furthermore, it perhaps increases the public health hazard but here again, there are no numbers. What is the percentage of pathogens, let us say, virus or bacteria in sewage which will be evaporated by putting it into the air, how far will it drift, and how much of a buffer zone do you need in order to protect such an installation. You can get engineering conjectures all the way from a 100-foot buffer zone to a 1,000-foot buffer zone. We intend to determine through meteorological investigations, what a feasible buffer zone might be so that the Town of Brookhaven, for instance, could take a ten-acre rig and put it in the proximity to a certain amount of habitation sometime in the next two to five years with impunity. We hope to be able to say within that length of time, yes, you will get a spread of pathogens no more than X feet downwind from certain meteorological conditions or no more than Y feet downwind under other meteorological conditions. This is the type of program that we are conducting jointly with the Town of Brookhaven, with the United States Army, and we would like with the State of New York if we could attract some more support to chase a few more facts down that we think would be of great interest and necessary to answer this problem which we feel has to be answered in order to recharge our aquifer.

We have no other water, as Mrs. Post said. We can't put it into the ocean. What is the sense of taking a high energy desalinization plant or distillation sewage plant if there is this alternative? And that's our whole contention.

DISCUSSION

CHAIRMAN CONWAY: *Thank you, Mr. Small. In addition to the environmental terms which you have outlined, are you going into the mechanical details, the problem of lands you would need to recharge at Brookhaven?*

MR. SMALL: There was a great deal of data concerning this that came from the Penn State ten-year experience. We had consultants from Penn State who are working with us. We are starting on the same basis that Penn State has worked out. They have run recharge rates all the way from two-tenths of an inch a day up to six inches a day. They have finally come out at one centimeter a day, a quarter of an inch, let us say. Penn State is sitting on four feet of top soil. Long Island is very lucky if it's sitting on four inches of top soil, I think you'll agree.

We are starting at one centimeter a day, five days a week. What is going to be the results of putting on one centimeter a day? It is going to be on the humus that we have, on the various horizons that we have. This is one of the things we're measuring. Is it going down through so darned fast that the root system can't possibly pick up the nutrients, the nitrates, the phosphates, or what's going to happen to the salt? What's going to happen to the heavy metals, the mercury, the lead, the cadmium, the zinc; are they going right on through? Is it going to hang up somewhere by adsorption somewhere between the soil horizon and the top of the water table?

We don't know, and we're equipped to determine this as answers which we think will be engineering answers to the sorts of questions you're asking. Now, I don't know what rate we will wind up with. I have all kinds of ideas as to how we might augment the rate of uptake by, let us say, the "A" horizon or the "B" horizon, what we might do down in the "C" and "D" horizons. We're not funded to do this type of investigation and maybe I'm here selling. I'm not entirely sure. We would dearly love to have more support for this project because we believe it is crucial for the entire future of our island and its population.

MR. FORSTER: *If this experiment proves practicable, will it be limited to the particular soil you have here on Long Island?*

MR. SMALL: I have the feeling but it's a personal hangup on my part. It has to be if we're talking about Long Island.

MR. FORSTER: *This is where you're doing the work. In order to make it applicable regionally or statewide, what do you suppose will happen in an area where you have a heavy clay underlay and no permeability?*

MR. SMALL: This essentially is the situation at Penn State or over a considerable portion of their terrain in the mountains near the State College of Pennsylvania. They have, in essence, four feet of humus but they also have considerable clay deposits and these are underlain by essentially a fractured rock strata. They have monitored this for many years and they have arrived at this one centimeter a day rate of application over whatever acreage you're talking about. Now, I'm not sure that this is right for Long Island and that was the point I wanted to make.

MR. FORSTER: *They have taken the position that one application a day is effective?*

MR. SMALL: Yes, without contamination to ground water runoff, or neighboring streams.

MR. FORSTER: *Has anything been published on this?*

MR. SMALL: Oh, a great deal. In fact, a publisher is publishing a great deal as far as Penn State is concerned.

MR. FARRELL: *Dr. Small, when did this experiment begin?*

MR. SMALL: Well, it began a year and a half ago, but we've had one hell of a job getting it off the ground so that the actual spraying of sewage began about a week ago. That is, we brought our systems in, using plain water for the last month and a half and there have been some trials and tribulations from that end of it.

MR. FARRELL: *At the rate that you are spraying in any one given area, approximately how many gallons a day would you say that you're spraying on a one-acre parcel?*

MR. SMALL: Twenty thousand gallons a day on each acre. At this rate of application it translates into 129 acres necessary for a population of 10,000 or a million gallons a day figuring 100 gallons per individual per day using the normal flush toilet.

MR. FARRELL: *Would you say it's your hope that this amount could be increased because of the difference in the soil here as opposed to Pennsylvania?*

MR. SMALL: Penn State took it up by a factor of three. They gave up because they got so much runoff largely as a result of heavy clay in their topsoil. We don't have much clay although you are likely to run into clay lenses on Long Island. What we are hoping is that by adding composted refuse, leaves, we can build up the humus layer which will be in addition to a crop and that we can perhaps put four, five, six loadings of organic material on the surface which will enhance the uptake of the water, reduce the amount of runoff.

But here again, as I said to Mr. Conway, we are not supportive of this kind of effort, but some of us think at any rate that this is the direction in which we should go because of the relative paucity of humus as topsoil cover on Long Island.

Now, I think this will vary wherever you go throughout the state but I think throughout Long Island that it is a pretty common phenomenon. There is not very much organic matter as topsoil left on the top of the surface unless it has been extensively farmed for the last few years. So this is part of the question, what is it necessary to do? Now, we may find we have to add primary, secondary, even tertiary such as ozone or disinfection steps, but first we would like to try it in this raw state, measure what happens in the zone of aeration and down in the water table and make sure what we're getting. We'd like a year to make these determinations. It's a reversible process. If we find we're getting too much then back up and go along back and add whatever is necessary as an energy input instead, for the development of this on Long Island. It could be a completely different problem, let us say, in the lakes area. I don't know what the geological, soil, or the agricultural phenomena are in any other areas of New York but I submit that it would be a different problem. We think that the approach, will have general usefulness once you accept the idea that you are going to develop that system for that area which will allow recharge.

MR. FORSTER: *Your 129 acres for a population of 10,000 doesn't take into consideration the acreage you will develop as a result of wind drift does it?*

MR. SMALL: No, we've very carefully avoided that sir, because we don't know what this acreage would be. Now, I think personally it need not be a buffer zone to amount to anything because the national statistics from the Center for Disease Control say that the people working around sewage spraying plants have an incidence

of disease less than the national average. They're a lot healthier than people, based on 40 years of statistics, than people who live elsewhere.

MR. FORSTER: *I'm stumped. My colleague and I were just chatting about your talk and we wondered what happened in the winter when you have a frozen condition.*

MR. SMALL: Mr. Robert Reid has seen this and I'll let him handle this.

MR. REID: This process came to the attention of the Town of Brookhaven after Supervisor Baroda and myself attended a conference in Denver about three years ago and that too was my first question having seen this on the program; What do they do in the winter because sewage doesn't stop in the winter! The reason that forests are the basic requisite for the spray in a plant like this is that the floor of the forest does not freeze in the winter. They're able to and do spray successfully at Penn State 365 days a year at the rate of 400,000 gallons a day. It does produce ice on the foliage, but the water does go through the flora parts very successfully. Also, a development of homes in the range of \$60,000 each was built adjacent to, and by that I mean within 100 or 200 feet, of a sprayed area after the people knew what they were spraying there. That has been the experience, the houses were sold, were lived in very successfully. I have gone right up to the spray while they are spraying on a hot July day, no aroma from it, no unpleasant flies or any other unpleasant conditions about it. The area is usable for other purposes, for instance hunting, when they're not actually spraying. Many things, it does keep it in the green area, of course. They have found a number of different plants which will pick up the nutrients and produce a rate of growth in trees and other plants far beyond that of control plants built at the same time so that they know where these nutrients are going and they're going into the living things which can be harvested. They put these in the summertime on things like corn which is then fed to the cattle and they have a large farm program at Penn State and have done this very successfully. They've harvested these nutrients, that we are otherwise throwing out in our case in the Atlantic Ocean. Phosphates and the nitrates are being put back into circulation and reused again.

MR. SMALL: If I could add to that, we have several biologists working on this program. One of the things that interests them the most is the question: What if you added year-round water at, let us say, 80 degrees Fahrenheit? What would happen to the flora and the fauna in that particular area? One of our

sister laboratories at Hanford has a proposal before the Atomic Energy Commission which has never gotten off the ground to take 200,000 acres on the opposite side of the Columbia River taking cooling water discharge from their nuclear reactors and flooding a grove of cottonwood and one other tree, I'm not sure what it is. Their calculations in theory indicate that you would get three times the growth by allowing in a temperate zone, a warm water containing nutrients to irrigate.

Now, we are not seriously proposing this. On the other hand, it is something to bear in mind when you are considering what to do with the thermal discharge of generating plants, and we would again like to investigate what the efficacy would be of actually using low temperature effluent, let us say, 75 to 125 degree effluent, from either a nuclear or a conventional fossil-fueled plant in enhancing the year-round growth in the temperate zone of various beneficial crops.

Another thing we would like to do, and no one has gotten up his nerve yet nor do we have the money to support it, is to say, "O. K., what happens if we put this pretty little blend on potatoes which is a crop on eastern Long Island," and we hope to get to this. But here again, I'm selling. I'd like some money.

CHAIRMAN CONWAY: Thank you again Mr. Small, and also, we thank you Mr. Reid.

Meanwhile, if there is nothing else, the meeting will be recessed until tomorrow morning.

ATTENDANCE

PUBLIC HEARING MINEOLA, NEW YORK

EVENING SESSION

SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

E. VIRGIL CONWAY, *Chairman*
GEORGE FARRELL
HERMAN FORSTER
WILLIAM J. SCHICKLER

STAFF

ROBERT D. HENNIGAN, *Executive Director*
EMMANUEL BUND, *Counsel*
DAVID BUERLE, *Director Management Studies and Analysis*
IRENE BAKER, *Public Relations*

SPEAKER

MRS. E. E. POST, *Action for the Preservation and Conservation of the North
Shore of Long Island*
ROBERT E. REID, *Councilman, Town of Brookhaven*
MAXWELL M. SMALL, *Brookhaven National Laboratories, Federal Projects Manager,
Upton, New York*

PROCEEDINGS OF PUBLIC HEARING MINEOLA, NEW YORK

OPENING REMARKS

MR. HERMAN FORSTER, *Commissioner*: Will this meeting of the Temporary State Commission on the Water Supply Needs of Southeastern New York please come to order. The first speaker this morning will be Mr. Sheldon Smith, Director of the Bureau of Water Resources, of the Nassau County Health Department, Mr. Smith.

PRESENTATION

MR. SHELDON SMITH, *Director of the Bureau of Water Resources, of the Nassau County Health Department*: The Nassau County Department of Health welcomes this opportunity to present its position on water supply needs to confirm and to supplement information already provided to the Commission at their Nassau County Conference on January 18, 1972, and informally at other times. The Department supports the goal of the Commission to determine and make recommendations on a regional basis for the future water supply needs of Southeastern New York State. We commend the Commission for its objectivity and thoroughness in carrying out its mission.

Nassau County's efforts in planning for its future water supply needs have already been presented to the Commission. These include the planning and implementation of a large comprehensive municipal sewerage program, completion of a comprehensive water supply study in 1971, the establishment of an on-going research

and development program for renovating and recharging waste water and close participation with the United States Geological Survey in the largest cooperative program of the Survey in the state. The Department is concurrently developing an extensive ground water monitoring system which will provide valuable information for assessing changes in our ground water reservoir and providing a documented basis for recommendations for ground water management decisions.

A combined state and local approach should properly resolve our water supply problems which involve two basic considerations--problems with quality and with quantity. We have provided information on the deterioration of our ground water quality due to the seepage of sewage effluents from thousands of domestic sewage disposal systems. The resulting abandonment of the glacial aquifer as a source of public water and contamination of the magothy formation, the County's major water supply source, is a serious concern.

The completion of the County's sewerage program is the key to resolving this problem and will insure the preservation of ground water quality. The current criteria for determining eligibility for federal and state grants for water pollution control projects, however, does not provide sufficient priority for ground water protection. Our views have been transmitted to the Department of Environmental Conservation. We strongly recommend the support of the Commission to insure that sufficient priority for federal and state assistance on Long Island sewerage projects be provided to enable us to quickly and effectively restore water quality where it has been damaged and to preserve those water sources that still remain unsullied.

While a municipal sewer program works effectively to protect the quality of ground water as well as bay waters, we are unavoidably creating a new problem: we are lowering our ground water table and, therefore, the surface streams, which are fed by the ground water source. To offset these detrimental aspects of municipal sewer systems, the County has, through comprehensive water studies completed in 1962 and up-dated in 1971, developed plans to conserve our ground water resources by fixing the maximum annual net withdrawal at our permissive sustained yield, approximately 151 million gallons per day. This is in harmony with the conservation goals of the State Department of Environmental Conservation.

According to the reports issued by the Commission thus far, there will be a deficit in Southeastern New York of 408 to 567 million gallons per day by the year 2000 and 711 to 996 million gallons per day by the year 2020. Nassau

County's deficit is approximately 22 per cent that of the entire region. Nassau's comprehensive water supply study has indicated that our long term needs could be met by either renovating and recharging waste water or importing water either from the New York City system or from Suffolk County. An immediate decision to renovate and recharge water is premature. That decision would have to wait for further research findings and in concert with decisions on regional water resource development and allocation yet to be made on a State level. Importing water would involve not only the development of new sources of water supply but include the means of transmitting the water to Nassau County. We understand that a special study by the Commission to determine the feasibility of delivering water to Nassau County from the New York City system is near completion.

The County, since 1964, has been exploring the renovation and recharge of waste water with substantial local financing and plans to undertake a large scale pilot project which should run through the 1970's. Since water recycling in Nassau would be part of a regional plan to alleviate future water supply deficiencies, to the extent that it would reduce the quantity of water required to be developed for the region from out-of-County sources, it is appropriate that substantial State financial support for research, development and operation be provided. The Nassau project is in reality part of a regional project and should be funded primarily from State funds.

Since renovation and recharge studies have not, at this time, been demonstrated to be feasible, the option of water importation for Nassau County must be kept open. In any event, the development of out-of-County sources will be required to meet the region's remaining needs for the next 50 years. What is necessary then is an independent State or Regional Agency with authority to developm implement and operate a regional water supply project to wholesale supplemental water to existing distribution agencies, to acquire needed existing water supply sources, and with authority to override local laws respecting the exporting of water but with obligation to provide for local deficits. In the case of Nassau County, the agency would wholesale the water to the County, where a county agency, possibly a County water department, would distribute the water to local purveyors directly. The new State agency would, of course, be required to submit its plans to the State Departments of Environmental Conservation and Health where they would be reviewed for conformance with the State's overall water resources objectives.

In summary we endorse the need for a regional plan to adequately provide sufficient water resources for all of southeastern New York. We recognize too, that the implementation of such a plan requires the surrender of some local authority for the common good. We strongly urge the Commission to include in their plan adequate provisions for protection of the quality of the ground water resources to insure their availability as a regional resource and to provide maximum State monies to support local research and development in waste water renovation and recharge which constitutes the development of a regional water resource.

Thank you.

MR. FORSTER: Thank you very much for a fine statement Mr. Smith. Our next speaker will be Mr. Joseph H. Baier, the Suffolk County Department of Environmental Control, who is acting director of Environmental Monitoring.

PRESENTATION

JOSEPH H. BAIER, *Acting Director, Environmental Monitoring, Suffolk County*: This is a statement on behalf of the County of Suffolk and the Department of Environmental Control. I have attempted to prepare my remarks as they were presented in your topics for discussion in the portion of the hearing announcement.

The first topic mentioned was that the Commission has determined that various possibilities for supplying the water such as direct reuse, weather modification and desalting, cannot be depended upon to meet future needs. On a regional or statewide basis, this is certainly true, however, from a local supply standpoint, the economics could show that some of these approaches could be workable. For example, Suffolk County, there are many isolated areas such as the North Fork, Shelter Island, and parts of the South Fork. These areas are already underlain with salt, and their supply could become unuseable at any time. If this should occur or we could predict when it would occur, then they would have to import fresh water from some other portion of the county. This would involve a major transmission system. The cost of such a system might be such that desalinization would be just as economical, if not cheaper. So on a local basis, I think some of these techniques might be feasible.

There is a great need for acquiring information about our ground water resources here on Long Island. This is especially true in Suffolk County. Some

of this work is done through cooperative agreements with the U.S. Geological Survey. However, most of their programs are on an individual study basis and not meant to be on-going. The Department of Environmental Control was established, in part, to carry out the monitoring and planning of Suffolk's ground water resource. The Department is in the process of installing an extensive well monitoring system to enable us to study the quality and quantity problems of our ground water. We are involved on a local basis with communities interested in defining their water resources in much greater detail than presented in the Comprehensive Water Supply Study for Suffolk County, CPWS-24. Communities such as the townships of East Hampton and Shelter Island are using local funds in an effort to find out more about their water resources. They feel that an even more urgent need to obtain this information more rapidly than the Department can obtain it. They are concerned that their water supply may be the limiting factor in planning and development.

Any assistance this Commission can give Suffolk County by recommending that the State give monetary assistance to the county or local governments to perform these detailed water resources studies would certainly be appreciated. I might also point out that the State's present monetary involvement, in the water resources studies taking place on Long Island, is limited to approximately \$15,000 with the U.S. Geological Survey's Mineola Office. I would point out that half of this comes from local government, half from the Federal Government, and also the million dollar program to construct a monitoring system allocated to the Department of Environmental Control by the Suffolk County Legislature. Our ground waters are classified as part of the water resources of the State, but the State is providing very little assistance in helping us learn about them.

Turning to water resources utilization, I feel we must differentiate here between the planning, utilization, and monitoring of the water resources versus the actual day-to-day mechanics of operation and maintenance of a water supply. These are two separate areas, and they should be kept separate and apart. To do this, it is essential that local control of the former functions be implemented. For example, when we discuss Long Island's water resource, we are not only discussing the ground water supply but also our lake and stream environment, and the runoff and underflow of fresh water to the sea. Local water suppliers are too involved in the day-to-day operations of their water supplies and very often are caught up in this day-to-day involvement and it is too much to be concerned about

the total water environment. Local officials, planners, and engineers are best able to control the use of the resources and, by keeping the requirements of the local supplier in mind, be able to insure that a clean, plentiful supply will always exist.

On the topic of pollution, investigations by Suffolk County have been previously pointed out to members of your Commission, so again I see no reason to take any further time to explain these studies; however, if any members of the Commission would like some further information on things like our fertilizer studies or leachate studies, I would be happy to discuss them with you at your convenience. Local suppliers can do very little about pollution except treat the water to remove the pollutants and make the water conform to the health standards. The pollution of the resource and the elimination of the pollution sources is something that a local government is better able to combat and control.

On the topic of water resource management and regulation, two problems are most imminent to Suffolk County--that of intercounty and intracounty supply. The Suffolk County Department of Environmental Control is presently establishing monitoring systems and establishing the capability for managing and regulating the ground water resources. One of the major deficiencies of our supply, which has already been pointed out in the Comprehensive Water Supply Study, is the lack of intracounty transmission facilities, both north and south and east and west. With the growth of Suffolk County--with the growth of our county, this deficiency could become even more critical. Our duty is to provide a satisfactory water supply to our citizens first and not give it away to others.

The institutional aspects of water resource management and regulation were discussed in quite some detail by the federal government in the NEWS Study. One of the important considerations of that report is that the federal government recognized their limitations in water supply and advocated local control. While they knew that regional planning must be implemented, they also stopped short of actually trying to supply specific municipalities. Thus, the federal government would provide water to counties such as Nassau and Suffolk from some larger resource and hopefully provide the aid to municipalities for the transmission facilities. The local government would decide how this water, which is delivered to its doorsteps, will be distributed. It is this limited type of involvement

which should also be adopted by the State, and I would hope that your Commission would recommend this. We have a unique ground water situation as you know; and by having this problem handled by an Albany-based office, or even a Long Island office reporting to Albany, makes proper management and especially response very difficult.

Nassau and Suffolk Counties have recently each had comprehensive water supply studies, both of which advocated county control of water supply. We, here on Long Island, are the ones who are most aware of our problems, are most capable of solving them and able to respond to the problems much quicker than the larger State Agency. However, I am not advocating that the State withdraw from this problem completely. The New York State Department of Environmental Conservation presently provides Suffolk County with State Aid for many of its programs. One of the programs not fully covered is the water supply program. The State could play a very vital role by extending this Aid Program to water resources management. This would allow the local county agency to plan and administer the program. A recommendation such as this would be very helpful--would be a very helpful and workable solution to the county's water resources problems. Again, let me reiterate that because of the uniqueness of our ground water situation and Long Island's location, management policies for Long Island are quite different than those through the remainder of the State; and it is for this reason that the management of the resources should be left to the local counties. We are putting in the time and effort, and have the expertise and the desire to manage the resources.

Another aspect of institutionalizing our water supplies should be the further recommendation for the elimination of the small water company, and the recommendation that the counties seek out local programs for acquisition. This has been recommended by both Nassau and Suffolk Counties' comprehensive water supply plans as well as the Community Water Supply Study done by the Public Health Service. Suffolk presently has 86 water suppliers; and with the exception of ten, the remainder of them are all small private companies serving little communities, trailer parks, garden apartments, etc. This Commission should go beyond recommending their elimination. You must set down a program of implementation to be followed by the Department. This is where State assistance can most certainly be used. Financial support should be provided to allow for the purchase of these supplies. This would provide the initiative needed to undertake the program. The support

should be extended to providing financial assistance for extension of public water supply facilities into private water areas. Current local restrictions prevent such extensions unless a certain amount of profit can be realized.

On the question of water metering and rates, there is no doubt that all consumers must be metered and this, in itself, is the best argument for extending water mains to private well areas where consumption is questionable. When all users are metered, we will know exactly how much of our resource is being used. The concept of reverse pricing should be considered. This as I'm sure you know is the concept whereby the more water a consumer, industry, etc. uses, the more it costs per gallon, and that this concept be extended to all industry and commerce on Long Island and extended to the consumer in water-poor areas.

Finally, the question of recharge must be addressed quite specifically by the Commission for Suffolk County. Our water resources here in Suffolk County provide us with many important ecological and environmental areas. We, in Suffolk County, are pledged to preserve as much of this as we possibly can. However, we realize that to do this, we must have a program of recharging waste water of satisfactory quality back into the ground and into the lakes and streams. This is another area where the State can play a very important role in assisting local governments. We urge the Commission to recommend that the State provide assistance to Suffolk County's recharging programs so as to preserve the natural value of our water environment and also to protect our water supply.

I thank you for the opportunity of appearing before you. Our personnel will be happy to discuss any of these points with the Commission at any time, and we look forward to receiving your final report. We especially hope that Long Island will receive the utmost consideration and that the Commission will be making recommendations to allow for the proper management of our water resources. Thank you.

MR. FORSTER: Thank you very much for a fine report Mr. Baier. Since there are no other speakers, I adjourn this hearing.

ATTENDANCE
PUBLIC HEARING MINEOLA, NEW YORK
MORNING SESSION
SOUTHEAST WATER SUPPLY COMMISSION

COMMISSIONERS

HERMAN FORSTER, *Acting Chairman*
WILLIAM J. SCHICKLER

STAFF

ROBERT D. HENNIGAN, *Executive Director*
EMMANUEL BUND, *Counsel*
DAVID E. BUERLE, *Director Management Studies and Analysis*
JEFFREY H. BREWER, *Research Assistant*
IRENE W. BAKER, *Public Relations*

SPEAKER

SHELDON SMITH, *Director of the Bureau of Water Resources, Nassau County Health
Department*
JOSEPH H. BAIER, *Acting Director of Environmental Monitoring, Suffolk County
Department of Environmental Control*

STATEMENTS

The following section of the report contains statements that were received by the Southeast Water Supply Commission, but were not formally presented. The statements are by both professional and civic groups and in some instances are responses to questions raised during various phases of the hearings.

STATEMENT OF WESTCHESTER WATER
WORKS CONFERENCE

August 24, 1973

Mr. E. Virgil Conway, Chairman
Temporary State Commission on
The Water Supply Needs of
Southeastern New York
30 Wall Street
New York, New York 10005

Dear Mr. Conway:

At the Commission's public hearing in White Plains on July 18, 1973, you suggested that the Westchester Water Works Conference submit additional information on its recommendations for members of the proposed Southeast Water Supply Authority (or Agency). Since that time, the Water Resources Committee of the Conference has investigated this matter and offers the following information for your perusal.

1. The exact definition of the scope and membership to create a Regional Authority (or Agency) would require a detailed investigation and report on similar systems in the Country, similarities with the Southeast New York proposed Regional Agency, methods of implementing and organizing the Southeast Regional Agency and drafting of the necessary State legislation that may be required for implementation of the Agency. The Conference cannot undertake such a detailed investigation and report but would be pleased to comment on any report prepared in the future.
2. On preliminary information now available, the Conference is of the opinion that the Southeast Water Supply Commission (SEWS) should be expanded into a super-regional organization Agency for water supply of the Study Area. The Agency should undertake construction, ownership and operation of the System for formation of a New York State Department (or Authority or Agency) embracing the 5 Counties in

New York City and 8 bordering counties of the SEWS study area. The Agency would absorb the existing City of New York collecting, storage and transmission facilities outside of the City limits and wholesale water to all Counties and communities in the area including New York City. (This would, of course, require major revisions or abolishments of present statutes). The Agency would expand planning, design and construction operations to undertake additional sources and aqueducts promptly by absorbing some or all of the staff of the New York City Board of Water Supply; supplemented by additional staff and outside consultants, as needed. Operation and maintenance costs should be collected in wholesale water charges to the customers. Construction of additional facilities should be financed by Bond issues.

3. Members of the Agency should represent an equitable distribution throughout the territorial limits. The members would be charged with over-all direction of the Agency including policy decisions, administration and management of the complete operation. The members should not exceed 15 in number; one member appointed by the chief executive officer of the 13 counties, one member at large (to possibly represent Adirondack interests) and one State representative (the Commissioner of the Departments of Environmental Conservation or Health). These last two members should be appointees of the Governor. The members should serve at the pleasure of the Governor who shall also appoint alternate members as substitutes (and advisory members in technology and management) on the request and recommendation of each member.

4. The Agency could also provide an additional sub-committee on finance to consist of two or three experts on this important aspect of its operation. (One member probably being the State Comptroller).

5. The Agency's staff should comprise one top echelon expert in the several proposed Divisions of the Agency, including planning, design, construction, management and operations.

6. The above general sketch of an institutional arrangement should provide a workable and efficient management for a Regional System to wholesale water in the area.

It furthermore would provide more equitable apportionment of responsibility than the existing system. It would include the State in the arrangement as leader and coordinator of the individual county and municipal systems without eliminating "ilome Rule" or local prerogatives in water system supplies, distribution and management. The State's involvement would also enhance possible State financial assistance and guidance for developing the urgently needed additional sources, aqueducts and systems. (Some of which undoubtedly will be outside of the 13 County territorial limits).

The Conference appreciate the opportunity of presenting its position of these matters of mutual concern to both your Commission and the Conference. We are deeply appreciative of the fine work already done by your Commission and offer whatever assistance the Conference can give to the future plans and recommendations for action promulgated by your Commission.

Very truly yours,

Paul P. Brienza, P.E.
Chairman

STATEMENT FOR THE RECORD OF THE TEMPORARY STATE
COMMISSION ON WATER SUPPLY NEEDS OF SOUTHEAST
NEW YORK STATE

from

ENVIRONMENTAL DEFENSE FUND

The Environmental Defense Fund (EDF) is a nationwide coalition of scientists and lawyers dedicated to the preservation and restoration of environmental quality in the United States. EDF maintains offices in East Setauket, New York (headquarters), Washington, D.C., Berkeley, California, and New York City (program support). EDF has a public membership of more than 45,000 individuals throughout the United States. The organization's major activities are public education and litigation concerning pesticides, environmental health, energy, water resources, air quality, land use, and other environmental problems.

For the past two years EDF has studied the U.S. Army Corps of Engineers' proposed Tocks Island Reservoir on the Delaware River between Pennsylvania and New Jersey. This reservoir would affect water supply for southeastern New York because the Delaware Basin provides approximately one-third of New York City's water. As a result of its interest in Tocks Island, EDF has become acquainted with the water supply demands and problems of southeastern New York.

Since the 1960's people have become increasingly aware that the earth's resources are not infinite. This summer brownouts and a gasoline shortage reminded us that our energy resources are limited. If we want unlimited energy, we must pay the high price of environmental degradation. Nuclear power plants pose threats to human health, fossil fuel plants use strip-mined coal which causes destruction of hundreds of thousands of acres of land, and ocean transportation of oil can lead to oil spills which destroy marine and estuarine ecosystems and degrade recreational beaches.

Unlimited highway construction, made possible by the Highway Trust Fund, also reminds us of the limitations of our environment. For almost two decades the "need" for new highways has not been questioned, and Trust Fund money has continued to flow. The costs of this policy are just now becoming apparent. Concrete walls

have divided communities and destroyed them. The automobile, which carries only 1.4 people on the average in cities, is responsible for many urban environmental problems: traffic, noise, and air pollution. Now we understand that highways are crowded not necessarily because people demand them but because highways themselves generate traffic. Drastic and expensive measures must be taken to control environmental damage caused by excessive highway construction. The U.S. Environmental Protection Agency indicates that if the Federal Clean Air Act of 1970 is to be enforced, then gasoline will have to be severely rationed in Los Angeles, some cars will only be permitted to enter Boston on alternate days, and New York City will have to restrict parking, ban taxi cruising, and impose tolls on the East River bridges.

EDF maintains that consideration of the water supply needs of southeastern New York has presented the Temporary State Commission with the opportunity to look beyond the traditional engineering solution to water supply problems. The Commission, however, has ignored this opportunity and has not questioned the implicit assumptions underlying the traditional engineering solutions. The Commission has only considered the narrow technical question of how big to build rather than whether to build or not. The Commission did not consider many non-technological factors which might affect such a decision. Legal constraints which prohibit the transfer of water from Suffolk to Nassau counties were not questioned, nor was a New York State policy which places capital expenditures for water supply outside the municipal debt limit, thereby making these expenditures essentially "free" money. Capital expenditures for water supply do not have to compete with schools, police stations sanitation trucks and highways. This is the Highway Trust Fund of water supply. It appears that this relative availability of capital for construction of water supply facilities has led to a policy which places emphasis on providing additional sources of water supply, rather than making more efficient use of the existing supply.

Although such questions have not even been considered in the Commission's report, the purpose of this testimony of the Environmental Defense Fund is to take issue with the findings of the Commission on the planning horizon, methodology, and design criteria employed by the Commission as well as various assumptions it has made. EDF suggests that the Commission review its analyses before making its recommendations.

The Commission has used the traditional 50-year planning horizon in projecting the expected deficit in water supply for the Southeastern Region, but has not discussed the implications of its acceptance of this conventional engineering approach. To calculate the dependable safe yield of a watershed, the Commission has employed a traditional engineering tool, the mass diagram, or Rippl, method. This is a graphical method developed in 1883, almost 100 years ago. Since that time, the engineering profession has changed dramatically. Engineers now use sophisticated statistical and economic analyses and the computer has produced new methods of hydrologic analysis. The Commission, however, has reviewed and accepted engineering reports that only use the Rippl method. Because the Commission's methodology will affect decisions involving the expenditure of \$3 billion and the inundation of tens of thousands of acres of watershed, EDF recommends that the Commission discuss its choice of methodology or, at the least, review critically those reports relying on the Rippl method.

Even if the 50-year planning horizon and the century-old methodology are accepted, serious questions remain concerning the Commission's design criteria. The Commission predicts that the regional water deficit in southeastern New York will be between 408 to 567 million gallons per day (mgd) by 2000 and 711 to 996 mgd by 2020. The Commission further assumes that per capita water consumption will continue to increase, and bases its estimates of future water demand on increased consumption and a recurrence of the 1960's drought, a drought expected to occur on the average once in approximately 400 to 500 years.

The Commission's use of the drought of record as the design criterion for water supply can be compared to designing electric power generation and distribution systems for a 105⁰ day when 25 percent of the capacity is down for repairs, or designing the Long Island Expressway for a Labor Day weekend when the Long Island Railroad is on strike. The argument in favor of using the 1960's drought is that, "No politician in his right mind would plan for less than the worst drought of record." Why not, then, provide an additional margin of safety by planning for the 750-year drought or 1,000-year drought?

One of the great early American water supply engineers, Allan Hazen, recognized that planning for the worst case is very expensive and suggested that the design storage should be adequate to compensate for a drought of severity not expected to occur more frequently than once every 20 years on the average. Through the years,

however, Hazen's wisdom has been replaced by the "to build is best" philosophy. Now a 15-year or 20-year design drought is not considered to provide enough margin of safety. Such arguments are, however, completely circular and a rational choice of the proper design criterion is impossible unless the implications of using the worst drought of record as the design criterion for Southeastern New York are analyzed. If we examine Figure 8 of the Commission's Report on the Scope of Public Water Supply Needs, we can roughly estimate the amount the projected deficit could be reduced if the 100-year drought was accepted as the design basis. Figure 8 suggests that by accepting a 100-year drought recurrence interval, the dependable safe yield for the Delaware System can be increased by 125 mgd or 25 percent. If this figure is extrapolated to the other surface water sources in the region, the expected increase in dependable safe yield is roughly 25 percent of 1526 mgd (1422 mgd for New York City plus 104 mgd for the mid-Hudson area) or 380 mgd. Using this design criterion there is regional deficit of only 59 mgd or 2 percent of the total demand in the year 2020 and then only for the high population projections. This, however, is somewhat misleading. If Nassau and Suffolk counties are excluded from the region and examined separately the regional deficit is 78-279 mgd in the year 2020 for the 500-year drought and a surplus of 302 to 101 mgd exists for the 100-year drought.

The Commission has not discussed what would happen if a drought occurred that was greater than its design standard. Tomorrow could be the start of the 1000-year drought. If this happened, would a water conservation program to curb non-essential uses be effective? Water is often viewed as a public good that must be provided to everyone in the quantity demanded. Richard Hazen of Hazen and Sawyer, in his testimony before the Commission state, "You can argue that we water the grass too much or one thing or another, but this is one of the amenities of life that we enjoy in this country and certainly it is not exorbitant." A \$3 billion price tag to prevent a brown lawn every 500, or even 100, years may be unjustified. The Commission must address the question of when the price of additional water becomes exorbitant.

Consideration of several other factors would also reduce the estimated regional water deficit in 2020. Such factors including the New York City excess contingency, the Chelsea Pumping Station, the New York City water metering program, new water conservation technology, a limited water conservation program during drought, and

the transfer of water from Suffolk to Nassau County, were not considered by the Commission. The excess contingency reserve in the New York City system is 125 mgd. This water should be subtracted from the regional water deficit. The Commission correctly criticized this contingency factor as being overly conservative. Acceptance of a 400-500 year drought as the design drought is questionable but to add a 25 percent contingency reserve is unreasonable. The Commission should also include the 50 mgd from the Chelsea pumping plant in the estimate of dependable safe yield.

The question of metering all water users in New York City has been discussed for 50 years. It is gratifying to learn that the New York City Environmental Protection Administration is submitting legislation requiring water meters in all new residential construction. The impact of such a policy is cumulative. Assuming the legislation is passed, a conservative estimate of its aggregate impact on water demand might be 80 mgd in the year 2000 and 160 mgd in the year 2020 or approximately a 15 percent reduction in per capita demand.

The Commission has accepted the apparently low estimate of annual growth in per capita water demand of 0.5 gallons per capita-day or 0.3 percent per year. This growth rate, however, is then projected until the year 2020. The implications of this assumption on the projected 2020 water deficit are very significant. The continuing increase in per capita use for water cannot continue indefinitely. Likewise, it cannot be changed overnight. Water-conserving technology for households is now available. For example, the recent report of the National Water Commission concludes that future water demands are not predetermined but depend largely on policy decisions that can be controlled by society. The identification of these policy options available to New York State must be discussed by the Commission.

New technology will have an impact only over the long run on water demand. Technology must be developed and tested, building codes must be changed, and finally the technology must be installed and accepted by the public. A conservative projection would be that the impact of new technology installed now would not be felt until after the year 2000 and that technological innovation could only halt the increase in per capita water use but not reduce it. Using the Commission's figures, this assumption would reduce aggregate demand for the entire region by 194 to 222 mgd in the year 2020.

The implications of a limited water conservation program during drought periods are very significant. Assume that lawn watering requires an estimated 20 gallons per capita day outside of New York City and that a reasonable conservation program will reduce this usage by 50 percent in the non-New York City counties. Further assume that in New York City the per capita useage for lawn watering and sidewalk washing is 10 gallons per capita day and that this can be reduced by 50 percent. Such a modest conservation program would save 122-129 mgd in 2020. For the 500-year design drought this conservation program would result in a surplus of 44 mgd for the low population projection and a deficit of 140 mgd for the high population projections.

Even with the 500-year drought as the design basis, the major regional water supply problem is on Long Island. why must the state develop upstate reservoirs and aqueducts to transport water to Nassau County when adjacent Suffolk County has a surplus? Will the upstate communities easily accept reservoirs destroying their valleys just because State law prohibits Suffolk County from exporting its surplus water?

If Nassau and Suffolk Counties are considered as a single unit, the two counties in 2020 would have an expected surplus of 56 mgd (low population projection) or a deficit of 45 mgd (high population projection) under conditions of the 500 year design drought. The regional water deficit excluding these two counties would be 78 to 279 mgd.

CONCLUSIONS:

1. The Commission must review its analyses and present justifications for its choice of a planning horizon, methodology and design criterion. At present the Commission has accepted conventional methodology and has failed to recognize its limitations.

2. The Commission must carefully analyze the economic, social and environmental costs imposed on all sectors of the public by drought. The possible reduction in demand through emphasis on water conservation must be explained. Presently the Commission's own figures suggest that the expenditure of funds for water supply may not be in the public interest.

3. The Commission must closely examine the Nassau-Suffolk problem separately and suggest feasible alternatives for cooperation between the two counties. If

cooperation is impossible then the Commission should be ready to recommend that Nassau County must either develop an expensive alternative source of water, e.g., desalination or reverse osmosis for its supplemental water needs or the county could adopt strict land use controls to prevent the additional development that would exhaust its own resources. Neither the entire state nor the Southeastern Region should be asked to subsidize a growth-at-any-policy philosophy.

	2000		2020	
	Low Population	High Population	Low Population	High Population
Projected Demand	2340	2534	2738	3089
Regional Water Supply Deficit (500 year drought)	408	567	711	996
N.Y.C. Excess Contingency Reserve	125	125	125	125
Chelsea Pumping Plant	50	50	50	50
N.Y.C. Metering Program	80	80	160	160
Adjustment for Growth in Per Capita Water Demand	0	0	184	222
Adjusted Regional Deficit - Nassau & Suffolk	153 182	312 129	192 56	439 45
Adjusted Regional Deficit excluding Nassau - Suffolk	(59)	189	78	279
Impact of Moderate Conserva- tion Program			122	139
Adjusted Regional Deficit 500 year drought and a moderate conservation program			(44)	140
Adjusted Regional Deficit (100 year drought)				
- Total Region	(237)	(68)	(188)	59
- Excluding Nassau - Suffolk	(321)	(191)	(302)	(101)

STATEMENT OF THE ASSOCIATION FOR THE
PROTECTION OF THE ADIRONDACKS

You will remember that at the last minute I was unable to attend the hearing in Albany on July 17 as planned, and I am writing this letter hoping that it will serve as the statement that I planned to make at that time.

It seems fairly apparent that as time progresses there will have to be an increasing indirect reuse of water and no doubt an increase in the directory use. However, the EPA statement appearing on Pages 87 and 88 and the subsequent comment on Pages 88 to 91, together with other material in the same volume, leave me definitely with the impression that the state of the art of water treatment is insufficient in its accomplishments and reliability to convince water supply planners that they can count on achieving technical solutions within a realistic time frame.

I would like to submit that this may well be because of the number of unknowns and variables in the situation and particularly the unknown which has to do with the removal and destruction of viruses which pose a threat, potentially, not only in the recharge of ground water but also in the reuse of river water such as the Hudson River supply. An examination of your volume issued in November, 1972, regarding the proceedings involving State Agency conferences, there is practically nothing bearing on this subject in connection with the conference with the Department of Health. I have been informed by Dr. J. S. Watson, Director of the Cold Spring Harbor Laboratory of Quantitative Biology, and author of the book, "The Double Helix" regarding the discovering of DNA, that the Health Department of New York State is very knowledgeable in regard to virology and in this connection I have been in touch with Dr. David Axelrod. From talking to these two men, it seems to me that there is a considerable gap between the medical and biological research fraternity on the one hand and the engineering fraternity on the other, which should be closed by cooperative effort. It also seems to me that from the literature listed or supplied by Dr. Axelrod there has been considerable progress made on virucidal processes, and that there is strong evidence that disinfection of water is going to prove more economical than

large-scale immunization. What is apparently most needed is development of methods to identify and measure viruses in large and perhaps continuous water samples. This would seem to be an appropriate area for Federal and State cooperation. The State should also dig up funds, either from its own pocket or with the help of the Federal Government, to advance a number of the promising laboratory techniques to the pilot plan stage. Until action along these lines is taken so that these problems seem soluble, it seems unlikely that large amounts of money will be spent to recharge our rivers or ground reserves with water that is pure in other respects.

I hope I haven't gotten in over my head in these discussions.

Sincerely yours,

/s/ Arthur M. Crocker

President

The Association for the Protection
of the Adirondacks

Enclosure

P.S. I enclose herewith Pages 217 and 218 from the Conference Summary of the Thirteenth Water Quality Conference on Virus and Water Quality held at the University of Illinois at Urbana on February 16, 1971.

Berg (3) and Sproul (29) have reported that in the past two decades nearly all treatment processes have been evaluated for their efficacy in viral removal. Unfortunately, only a few representative viruses were used as working models in these studies.

In the most recent and detailed studies of 20 strains of human enteric viruses, Liu et al. (29) report that a wide range of resistance for viruses toward chlorine has been demonstrated in the laboratory. The difference is indeed impressive, i.e., from 4 minutes to 40 minutes are required to kill 99.9 percent of different types of viruses even under exceptionally ideal conditions. A great deal, however, is still unknown concerning the performance of chlorination, as well as other processes, in the field. Several areas are in need of further documentation as to field efficacies and may be summarized as follows:

1. The number of viruses studied in the past has been insufficient to constitute a fair sampling. The response of those viruses not tested is unpredictable at this time, especially in regard to the hepatitis virus which, to date, cannot be handled

experimentally. Thus, it is paramount that all known enteric viruses be investigated for their responses to treatment processes.

2. Most past studies were conducted in the laboratory with the exception of a few which were conducted on a pilot scale. It is inappropriate to extrapolate the results of these studies directly to field application. Therefore, pilot plant, as well as actual treatment plant studies, remain to be accomplished.

3. The viruses used in these previous investigations were all laboratory strains with the exception of the hepatitis virus.(31) These viruses in many respects are known to be different from those occurring in the natural environment. Studies involving these "natural" viruses have not been carried out to determine what differences, if any, exist in their response to the various treatment processes.

Many environmental factors and their possible combinations have not been thoroughly explored and defined. Studies to determine the optimal conditions for each treatment process as regards the removal of viral pollutants remain to be carried out.

Thus, it is clear that considerable work remains to be accomplished in order to conclusively demonstrate the effect of each process on the removal or destruction of the whole spectrum of enteric viruses. At the moment, we are by no means sure that these processes are capable of achieving the desired objective. In addition, we are unsure as to the margin of safety provided by any combination of these processes.

New methods and improved procedures have been described by Oliver (32), Kruse (33), and others. Dr. Kruse's discussion on disinfection of water and wastewater was not only very informative but also of practical importance. It is generally agreed, and rightly so, that in the eradication of enteric virus diseases, the environmental approach would be more expeditious as well as economical, than would the biomedical approach, e.g., new vaccines, chemotherapeutic agents, etc. Given the adequate pretreatment referred to by Berg (3) and Geldreich and Clarke (27), this problem could well be expeditiously solved at a cost of 20 cents per person (\$40,000,000) annually in this country. (34) This would allow for sufficient chlorine to be used so as to disinfect all community water supply systems. Although this rather simplified solution remains to be epidemiologically documented by field studies, it does, however, definitely support the merit of using the environmental approach. As the old saying goes, the most efficient way to control an infectious disease is to break the weakest link in the chain of events.

FUTURE CONSIDERATIONS

Finally, I would like to discuss what I think should be done to resolve the numerous scientific questions which have been raised during this Conference. First, I believe we must establish a goal: The eradication of waterborne, viral diseases, both known and suspected diseases. This is essential to the full realization of benefits of water-based recreation, food production, and the premier water use -- drinking water.

Secondly, the fundamental philosophy for the approach must be established: The "Scientific Approach" must be followed. The facts must be gathered and evaluated in a step-by-step manner. Action taken on the basis of assumption or opinion can be very dangerous where human health and safety are concerned. Virologists need only recall the Kolmer incident and the Carter incident to point out the pitfalls resulting from action without complete knowledge.

Thirdly, it must be recognized that virology is an expensive and time-consuming discipline. But society will support the necessary expense of research and development activities. We need only to translate the technical definition of the problems of the present and the future into terms which the layman can understand, including the costs to society if action is deferred, versus the benefits to be expected from research and development efforts.

In the past, environmentalists have had to wait and then act when the public could see or smell environmental neglect -- massive fishkills, oil-soaked beaches, algal-choked lakes, and smogladen skies. But this is the era of environmental concern. The public has come of age and has begun to recognize the need for prevention rather than cure. Recognizing that the current problems in virology may only represent the visible tip of an iceberg by comparison with problems of the future, involving both intensified usage of our lakes, streams, and coastlines, and the potential requirement of direct reuse to satisfy municipal water supply needs; the time to act is now.

Return to your laboratories and universities to evaluate what has been said during this Conference, and to plan your future studies and investigations. But in doing so, remember our collective responsibility is not only to satisfy a scientific peer group as to the appropriateness of the experimental design and the validity of the resulting data and conclusions, but there is the concurrent responsibility to communicate and secure the constructive support of the public. This is

essential both to support the necessary research and development costs of today, and to assure application of your results in the future.

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STATEMENT OF THE ADIRONDACK MOUNTAIN CLUB

36 Oxford Circle
Troy, N.Y., 12180
July 29, 1973

Albany Chapter, Inc., Adirondack Mountain Club

Temporary Study Commission on the Water Supply Needs of
Southeastern New York
41 State Street
Albany, New York 12207

Re: Hearing, Albany, NY on July 17, 1973

Dear Sirs:

Although unable to attend the hearing, Albany Chapter of the Adirondack Mountain Club wishes to submit the following statement.

We call the Commission's attention to the proposed "Environmental Plan for New York State" recently made public by the NY State Dept. of Environmental Conservation. From page 45 of this Plan: "It is not good environmental or economic sense to consider development of new water supply sources unless existing supplies are being used as effectively as possible. Similarly, it would be irresponsible resource management to assume that projected trends in increased water use will or indeed should actually take place. In large part, present data are built upon experience in an era of cheap, plentiful water, with little or no incentive for industry... or the homeowner, to consider immediate or ultimate water needs."

It is our understanding that a significant fraction of New York City is still unmetered and that, even for metered users, water is being sold below cost. Not only should there be complete metering, but a rate structure conducive to conserving water should also be set up. We note that this is essentially recommendation 14.d of page 48 of the DEC Plan.

It is our further understanding that repairing the many leaks in the New York City system would decrease water supply needs significantly. (See "Alternatives to the Destruction of the Upper Hudson River" by J. E. Bigelow, published by Adirondack Hudson River Association, January, 1969.)

In short, it would seem that New York City should seriously consider matching demand to available supply instead of vice-versa. Although the above suggestions will

not solve all of Southeastern New York's water supply problems, their implementation should significantly lower the demand for more water.

We thank you for this opportunity to present our comments.

Donald M. Gray,
Conservation Comm. Chmn.,
Albany Chapter, ADK

STATEMENT FOR THE RECORD OF THE TEMPORARY STATE
COMMISSION ON WATER SUPPLY NEEDS OF SOUTHEAST
NEW YORK STATE
from
SCENIC HUDSON PRESERVATION CONFERENCE

July 29, 1973

The allocation of resources and services vital to life as we know it today probably constitutes the greatest problem that confronts us. Today's citizens cannot maintain an adequate standard of living without an adequate water supply. In recent years, we have been made acutely aware of that, as well as of other problems built into our mode of living.

In the 1930's, for instance, the worst drought on record in the United States, up until then, seriously impaired the growth and welfare of our largest cities. It also deprived manufacturers and farmers of their ability to adequately supply us with the fruits of their production. Thirty years later, in the sixties, an even worse drought again forcibly called attention to the value of our most basic resource and showed us the fragility of our supply systems when they are under the pressure of a natural phenomenon.

In the mid-Hudson region, we are faced with a complex fresh water problem. We draw a large percentage of our municipal water supplies from ground and surface waters. But almost half of the water required by the region comes from a number of taps on New York City facilities. But New York City, past experience shows, does not always have water to give to its neighbor areas.

In the Newburgh area, for instance, present water requirements already exceed "safe yield" by 600,000 gallons per day. And this is in an area that every planning authority predicts will experience maximum growth within the next 20 to 30 years. It is also an area in which ground water cannot be considered an important source of future development and expansion of supplies. The bed rock is extremely limited aquifer. The glacial outwash cannot be relied on as an important future source of water in terms of quantity. In short, surface waters become more and more vital to the future of the mid-Hudson.

The watershed of Newburgh and New Windsor, immediately to the north of

Cornwall, is threatened with impairment by a proposed airport development. The New York Catskill aqueduct holds no great potential for the future and any surplus it might have will have to support the growth of Westchester and Putnam Counties, since Westchester takes approximately three quarters of its total supply from the New York City system. As for the Hudson River, it is too often brackish and already overburdened with demands -- for water for cooling purposes, for industrial use and for drinking. Its marine resources already are jeopardized.

The preservation and further development of surface waters is absolutely essential to any growth within the mid-Hudson area.

With the known water limitations of the area established, Scenic Hudson would like to call your attention to something that must be considered in a new light. This is the sacrifice of a superb water supply for a utility project that is not necessary to supply power to the metropolitan region. Cornwall currently has an adequate supply of mountain reservoir water which has been of such high quality that filtration and treatment have not been necessary. One of these reservoirs in one watershed would be destroyed to accommodate a project proposed in 1962 by Consolidated Edison Company of New York. This, of course, was before the drought of the sixties when the problem was not as important as "living better electrically." As New York City has pointed out, in protesting the project because of the danger to the City's water supply, a city lacking in water is more seriously impaired than a city lacking in electricity.

The problem is the proposed pumped storage plant that Con Edison, in 1962, proposed to construct -- and still wants to build -- at Cornwall. The upper storage basin of the facility would encompass -- i.e., destroy -- the upper reservoir of this Cornwall water supply system. There has been testimony to the effect that if the plant were constructed, with its eight-billion-gallon storage basin, there would be seepage, leakage and possibly interconnection of mountain water resources that would destroy other reservoirs in the mountain system.

Be that as it may, in an area known to be short of fresh water resources and which must import a good share of its needs, it would be unconscionable to allow the destruction of a presently viable pure water resource to clear the way for a project that has known alternatives and that would not even serve the region it would deprive.

Your Commission already has concluded that the "water supply deficit for

Southeastern New York will range from 410 to 570 million gallons per day in the year 2000, and almost double that in the year 2020." Your Commission has stated further that "the major need (for water) is for New York City and the mid-Hudson area, comprising some 80% of the (total) need."

Your Commission is charged with the identification of water resources and to study the relation of water need to growth. However, Scenic Hudson respectfully suggests that it is also within the scope of your responsibilities to examine any needless waste of water resources, especially for the accomodation of relatively short-term utility projects.

STATEMENT OF MANHASSET LANDMARK SOCIETY
19 Wood Place
Manhasset, New York 11030

The Manhasset Landmark Society members and the Council of 17 Civic Associations of Greater Manhasset have been following the water supply situation for several years. We wish to inform your Commission that we oppose any expansion of the sewerage program for Long Island as it is detrimental to our water supply. Last July at a meeting held at the Manhasset High School auditorium 1100 persons indicated to their elected officials that sewers in the Kings Point, Manhasset, Great Neck Estates area would not be welcome. More persons attempted to attend this meeting but could not, due to fire regulations with regard to maximum occupancy and the lack of any parking space within a quarter of a mile.

Our arguments for stopping the sewerage were two pronged--ecological and economic. We in Manhasset believe that individual household wastewater disposal systems are far superior to a municipal sewage treatment program. These systems, commonly referred to as cesspools and septic tanks, return water to the ground thus assuring a supply for future water needs. In addition, they take advantage of the forces of nature using very little machinery; therefore, mechanical breakdowns and maintenance are minimal. The operation of these systems is by bacterial action and filtration. Bacterial action is a more reliable method of water purification than chemical action because the temperature underground is constant. The operation of sewage treatment plants are often uneven due to the quality control of the chemicals, human error at the plant, overburdening of capacity and mechanical failures. These factors very often cause raw sewage to spew into our marine environment. A properly designed household system sends effluent into the ground water that is as clean as the secondary treated sewage that issues from sewer outfalls; furthermore, it is possible to design individual systems that could produce tertiary treated effluent.

The health of the community is better served by individual systems on Long Island due to the length of time necessary for water to percolate down to the wellhead. It takes from thirty to three thousand years for today's rain and effluent to reach the public supply well screens in Nassau County. In that time any viruses that may have entered the system have been subject to aerobic and

anaerobic bacterial action; moreover, viruses require a host in order to live, during the long trek through many layers of clay, sand and gravel the host and concomitant virus dies off. The chlorination process of a sewage treatment plant has no effect on viruses whatsoever; consequently, viruses are present in sewer outfall discharges.

Inorganic fertilizer is the source of the nitrogen that is present in water drawn from certain wells in the Magothy along the spine of Long Island and not, as the myth would have us believe, organic materials from individual household systems. This has been determined by means of an isotopic tracing of the nitrogen 14 and 15 atom. Since there is a large amount of this kind of nitrogen already on its way down to endanger our water supply, we must be prepared to remove it at the wellhead and immediately institute a ban on this harmful fertilizer practice.

An individual disposal system requires an overall density of one acre per family for the proper water recharge of a residential area. The open green space adjacent to a 1/4-acre residential area allows a proper natural function due to the lateral movement of the water through the ground. Roughly, the ground-water divide is along Jericho Turnpike where the ground-water movement is almost vertical. North of the divide the ground-water moves toward Long Island Sound. South of the divide the ground-water moves toward the south shore bays and the ocean. For this reason there should be a building moratorium on shoreline building, also existing structures should immediately be made to upgrade the quality of their individual systems. Due to the fortuitous location and size of three undeveloped areas in the Town of North Hempstead, they should be set aside as natural aquifer recharge areas. The Sand Pits in Port Washington, the Whitney-Payson tract and the Village of North Hills are all adjacent to residential areas. The seepage from these open green spaces dilutes the residential seepage as the groundwater moves toward the Sound. Any imbalance of the present condition due to downzonings would cause insurmountable problems.

Since the onset of the County's sewerage program the water table has dropped twenty feet. The precipitation in excess of the average for Nassau County has caused flooding in certain areas and has not remedied the water deficit, because it takes a very long time for rainwater to percolate to the well screens.

The nature of an island mandates a healthy marine environment. Massive introduction of foreign matter into our bays disturb the salinity range and de-

stroys whole ecosystems; moreover, sewer outfalls produce a nitrogen enriched effluent that promotes excess plant growth which causes fishkills due to oxygen starvation and the condition known as eutrophication.

Sewering allows a more intense use of the land. The desire of builders to maximize the use of land for profit promotes the building of apartments causing a sharp increase in the amount of water consumed. In addition, the necessary streets, roads and parking lots reduces the areas for rain water to seep into the ground.

It has been documented in water district records on Long Island that as soon as an area is sewered the consumption is increased by fifty per cent.

The cost of sewers, even in an area that is 96 per cent developed as Nassau County, is astronomical. Twenty thousand dollars per household is the figure for the total cost of financing, establishing and maintaining a sewer collection and disposal district.

Expanding the sewer program is cancerous and self-destructive to Long Island's water source. We need legislation to set standards for the efficient design and drainage of new and existing household wastewater disposal systems.

We must take steps to assure that the land use is limited so as to provide for the natural replenishment of our underground aquifers in order to protect the health, safety, and welfare of the citizens of the state. If the land is limited so as to prevent the owners from any reasonable use then the land must be acquired in the public interest.

People who choose to live on an island have an obligation to live within their water budget, particularly, if they are blessed with an extraordinarily protected water supply which if properly and wisely used can continue to be a renewable resource for generations to come.

The security of Long Island's underground water supply is the most unique in the entire world unlike New York City where the water supply is exposed to the atmosphere not only by airborne pollutants and nuclear fallout but by human sabotage. In Ohio a disgruntled person poured a quart of the highly toxic substance Endrin into a reservoir causing a great deal of damage and expense.

The inverted rate structure currently in use by water districts on Long Island must be reversed as a measure to conserve water. Two water districts across the nation have already taken this step. A district in California and one

in Maryland have started what should be a precedent. The significant fact is that both of these districts are in areas not threatened by a water shortage!

The water supply solutions as proposed by Nassau County officials are simplistic. Importation, desalinization and recharge are questionable with regard to legal, environmental and practical difficulties. The importation of water to meet our needs is dishonest. Water is a natural resource of finite quantity, and each area has an inherent right to use its indigenous water. In Texas a Judge ruled that a declining underground water table on a farm represents the depletion of a natural deposit as defined under the income tax code and the property owner is entitled to a tax deduction by reason of the lowering value of his lands.

Desalinization is not environmentally correct due to the large waste of energy in the conversion process and is limited insofar as reliably producing extremely large volumes of water due to the corrosive properties of the raw product.

Mechanical recharge is not the answer to our problem as demonstrated by the numerous difficulties in the attempt to recharge treated effluent at the Bay Park Plant ever since 1963. Besides, the legality of recharging into the aquifers at present is dubious, because Section 1215 of the County Government Law of the Nassau County Charter provides "that all such treated effluent must be transported and emptied into the coastal waters of the County."

Every legally feasible effort should be made by society to adjust to the natural hydrologic cycle and any unnecessary tampering by man should be avoided. By insisting on full compliance with the statutory purposes of zoning (New York State Town Law Section #263 and Village Law Section 177/7-704 reenacted 9/1/73.) with regard for the 'most appropriate use of the land', we will end up with ecological zoning.

A criticism of the working of your Commission is the notable lack of conservation and community leaders both serving as members and liaison agencies. When one government agency deals almost exclusively with other government agencies the question of inbreeding might arise. Your interface with the private sector is tenuous.

I sense a strong citizen grass roots upwelling regarding present land use practices in conjunction with sewerage programs. As protectors of our water supply you would do well to note this trend.

Ms. Doris Koedding, Founder

CONSERVATION ADVISORY COUNCIL

Town of Stony Point
Stony Point, New York

July 12, 1971

Stony Point Town Board
Attention: Mr. Harold K. Grune, Supervisor
Stony Point Town Hall
Stony Point, New York 10980

Honorable Sir:

In its program of evaluating potential sites for recreation in the Township of Stony Point, the Conservation Advisory Council (CAC) asked for a meeting with officials of the Spring Valley Water Company to explore the recreational possibilities at the Ambrey Pond Reservoir site. The meeting, arranged through your good offices, was held on March 25th, 1971. It was disappointing in that statements regarding recreational potential were evasive, as were answers to questions on structural installations and completion schedule.

Following this unhappy experience CAC decided to investigate the water supply problem for the Township of Stony Point with particular reference to the Ambrey Pond Reservoir. The basic findings were as follows:

(1) The water supply of the town is inadequate to permit orderly growth and development. The major source of supply is Cedar Pond Brook and presently the Water Company pumps approximately 400 million gallons per year from this brook. The maximum yield of the brook is rated as 1.5 million gallons per day; the average yield is 1 million gallons, and the safe yield is .4 million gallons per day. In dry seasons this water supply is augmented by a siphon arrangement from Lake Tiorati in the Palisades Interstate Park. Wells and springs supply approximately an addi-

tional .7 million gallons a day. The present consumption in the Haverstraw-Stony Point area serviced by the company is approximately 2 million gallons per day. Thus the water supply safety factor is tenuous or non-existent, and furthermore the heavy use of water from the brook threatens its very viability.

(2) On November 6th, 1968, the Spring Valley Water Company filed with the Department of Conservation, Water Resource Commission, State of New York, the water supply application No. 5643 for the construction of the Ambrey Pond Reservoir. A hearing on this application was held on December 17th, 1968 and a decision was rendered on February 6th, 1969. The ruling on this application was favorable and based in part on the following proposals:

(a) That the company construct the proposed reservoir by the building of a gravity type dam just downstream on a tributary to Cedar Pond Brook below an existing dam forming Ambrey Pond.

(b) That a diversion dam be built on Lake Tiorati Brook (Cedar Pond Brook) in the Palisades Interstate Park to divert water from this brook through a 30-inch line into the reservoir.

(c) That the water be drawn from the reservoir through a multi-port intake, built into the spillway of the dam and flowing through the tributary brook and Cedar Pond Brook to the existing filter plant and pumping station.

(d) That at the highest elevation of the flow line (285 feet above sea level) the reservoir would have a capacity of about 400 million gallons with an estimated safe yield of 3.4 million gallons per day and that this yield could be increased to approximately 5 million gallons per day through the removal of unconsolidated material.

(3) The Palisades Interstate Park Commission and the Water Company have reached an agreement on the right to the use of water from Lake Tiorati under the proposal and the Park Commission has supported approval of the project.

(4) Under "Conditions" the Water Resources Commission under heading E states:

"Unless the works authorized by this decision shall have been fully completed by January 1st, 1972, or within such extended time as may have been applied for and granted by the Commission, then and on that date this decision shall be deemed to have lapsed and to be of no further force and effect."

On the basis of the above findings CAC recommends that the Town Board of Stony Point make the following requests:

- (1) A definite date and completion schedule for the reservoir so that a safe water supply for orderly town development can be guaranteed.
- (2) A guarantee from the Water Company that the diversion of the water of the brook into the reservoir will not reduce Cedar Pond Brook to a nonviable stream bed with the concomitant deterioration of the Stony Point green belt.
- (3) Permission from the Water Company for recreational uses of the reservoir area, these to include fishing, boating, and trails for walking, to be restricted to persons having applied for and having been granted permits for such uses.

The members of CAC unanimously endorse the above requests and also wish to go on record warning the Town Board that a water shortage is imminent and that construction of the reservoir must no longer be delayed.

Sincerely yours,

Fritz E. Popken, Chairman

CONSERVATION ADVISORY COUNCIL
Town of Stony Point
Stony Point, New York

August 12, 1972

Walter L. Fleisher, Jr.
Vice President
WEST BRANCH CONSERVATION ASSOCIATION
100 South Mountain Road
New York, New York 10956

Dear Mr. Fleisher:

May we thank you for sending a copy of the WEST BRANCH CONSERVATION ASSOCIATION report -- "Water Resources of Rockland County: An Evaluation of the Official Study" -- which the Stony Point Conservation Advisory Council heartily endorses. We are forwarding to you herewith a copy of one of our letters dated July 10, 1971, that may be of interest.

Our concern for Stony Point's future water supply is tied in with our concern for the deteriorating condition of Cedar Pond Brook, the main source of supply for the local pumping station maintained by the Spring Valley Water Company. During the past years we have seen this stream die gradually from over pumping. Twenty years ago when the water company, which then supplied Stony Point's water, pumped no more than 500,000 gallons a day, the stream could support life. But increased pumping over the years has taken its toll. Now, every summer the stream below the dam goes completely dry and above the dam there isn't enough water to sustain life or to hold the banks from caving in.

We have repeatedly asked the Spring Valley Water Company to give us their plans

for the future water supply. Is the Ambroy Reservoir to be built? If not, what is the alternative plan: The Stony Point Conservation Advisory Council thinks that it is neither practical, nor conservation-minded, for our future water supply to be dependent on a disappearing stream.

We appreciate your research in this field and if we can be of any help in the future, please let us know.

Sincerely,

Adele Earnest
Conservation Advisory Council
Town of Stony Point

CONSERVATION ADVISORY COUNCIL
Town of Stony Point
Stony Point, New York

November 28, 1972

Mr. R. A. Gerber, Vice President
Spring Valley Water Company
Route 45
Spring Valley, New York

Dear Mr. Gerber:

May we ask what the decision has been concerning the construction of the Ambrey Reservoir in Stony Point? In late Spring 1972, during a conversation with Mr. Grune and Mr. Popken, you indicated a decision to build, or not to build, would be made in the Summer of 1972.

We assume this decision has now been made. If your plan is not to build, may we have your alternate ideas of sources for Stony Point's water supply? This information is necessary for the preparation of our Master Plan and our Conservation Advisory Council report.

We were assured, previously, that your present practice of pumping water from our local Cedar Pond Brook was a temporary expediency. Obviously, Cedar Pond Brook, which dries up now during the summer cannot be depended upon to serve a growing population's future water needs.

Thank you for your prompt reply.

Sincerely,

Adele Earnest
Conservation Advisory Council
Town of Stony Point

SPRING VALLEY WATER COMPANY
Incorporated
Spring Valley, New York

December 13, 1972

Mrs. Adele Earnest
Conservation Advisory Council
Town of Stony Point
Stony Point, New York 10980

Dear Mrs. Earnest:

This is in reply to your inquiry of November 28 in which you ask the status of the proposed Ambrey Pond Reservoir project.

It has not yet been decided when construction is to be initiated. Pending real estate matters prevent us from doing so. Nevertheless, progress along these lines is being made; and we expect that our steady efforts will result in an successful conclusion.

Please be assured that any delay in constructing the Ambrey Pond Reservoir is in no way jeopardizing the continuous delivery to Stony Point of an ample supply of water for all its needs. As you are aware, every area of Rockland County served by the Spring Valley Water Company is integrated into a single water system. Thus, the full resources of the Company are available at all times to meet the demands placed upon it.

Very truly yours,

Robert A. Gerber
Vice President - Manager